EVALUATION OF THE COMMERCIAL & INDUSTRIAL SECTOR MARKETS AND ACTIVITIES OF VERMONT'S ENERGY EFFICIENCY UTILITY

Volume II: Appendices

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List of Documents Reviewed

Appendix A

GDS Associates, Inc.
Engineers and Consultants

DOCUMENT LIST FOR REVIEW OF EVT, BED & RELATED MATERIALS

(July 13, 2001)

Overarching State of Vermont Policy Documents

1. *VT DPS ACT 250 Energy Standards and Vermont Consolidated Act 250 Energy Guidelines for Typical Commercial & Industrial (C&I) Buildings,* October 15, 1998*, and Vermont Department of Public Service - Act 250 Energy Review*

2. *Vermont Twenty Year Electric Plan (Pursuant to 30 V.S.A. 202(e))* – Department of Public Service, December 1994

3. *Statewide Energy Efficiency Plan - The Power To Save: A Plan to Transform Vermont's Energy Efficiency Markets*, Vermont Department of Public Service, May 23, 1997

4. *Vermont Department of Public Service Biennial Report*, July 1, 1998 - June 30, 2000

Energy Efficiency Utility-Specific Materials

1. SAVENERGY - A Proposal for Vermont's New Energy Efficiency Utility – Relevant Sections Describing C/I Programs

2. *SAVENERGY Proposal Appendix A – Example Program Theory and Market Effects CEO Program*

3. *VEIC Contract with VT PSB* – for EEU and Related Attachments

4. *Quarterly Report to the Vermont Public Service Board – for the period October 1 to December 31, 2000*, EVT

5. *Efficiency Vermont - Annual Report 2000 and Supplemental Work Papers*, EVT, March 1, 2001

6. *Efficiency Vermont 2001 Annual Plan*, EVT, October 6, 2000. Presents EVT's plans for modification of current statewide core program designs for implementation in 2001, or sooner and presents the Emerging Markets Initiatives that EVT proposes to develop and implement in 2001 along with updated and revised budgets for 2001 and 2002 and a proposal for upward adjustment of the contractual Electricity Savings Goal.

7. *Documentation of Completion of Performance Award Indicator #10 – Completion and Adoption of Master Quality Assurance Plan*, EVT, January 2, 2001

8. Efficiency Vermont – Various C&I Program Materials: *CEO Program Procedures Index*, Various Marketing Materials, VEIC Web-Site Information

Burlington Electric Department-Related Items:

1. *Order Re: Approval of City of Burlington Electric Department's Proposal to Implement Core Programs Within its Service Territory*, State of Vermont Public Service Board, September 22, 2000

2. Burlington Electric Department - Various Program Materials

Relevant Reports and Studies:

1. *Green Mountain Power/Central Vermont Public Service C&I Market-Driven Programs - Market Assessment and Process Evaluation*, Fred Gordon, June 30, 1997

2. *Survey of Commercial New Construction Activities in New Hampshire – Final Report May 2000*, GDS Associates and Entech Engineering

3. *NYSERDA Relevant Market Assessment and Baseline Studies* (New Construction, Motors, Small Commercial Lighting, Commercial HVAC, Innovative Opportunities - Lighting, Schools, LED Traffic Signals, Public Street Lighting, Government Procurement, Transformers, Public Opinion Research) Status and public availability being assessed

4. *New Jersey Electric & Gas Utilities: Commercial Energy Efficient Construction Baseline Study – Task 1 Final Report Onsite Survey of New Construction & Renovation Projects*, RLW Analytics, January 2000

5. *PSE&G Commercial Lighting Design Assessment – Addendum to the New Jersey Commercial Baseline Study*, Robert Sardinsky in support of Pacific Energy Associates, January 20000

6. *New Jersey Electric & Gas Utilities: Commercial Energy Efficient Lighting and HVAC Baseline Study – Task II Report Decision-Maker Interviews*, Roper Starch Worldwide Inc. & RLW Analytics, February 2000

7. *New Jersey Electric & Gas Utilities: Commercial Energy Efficient Lighting and HVAC Baseline Study – Task III Report Equipment Replacement and Remodeling Interviews*, RLW Analytics, February 2000

8. *Cool Choice Study Group – Northeast C&I HVAC Initiative Process Assessment*, January 15, 2001, PA Consulting Group

9. *Keyspan C/I Baseline Study – Secondary Search Memorandum of Findings*, LIPA 2001

10. *California NRNC Baseline Study*, 1999

Appendix A

APPENDIX B

Researchable Questions

Appendix B

RESEARCHABLE QUESTIONS FOR THE EVALUATION OF EVT'S COMMERCIAL AND INDUSTRIAL PROGRAMS

TOPIC AREA	BUILDING OWNERS	DEVELOPERS	ARCHITECTS	ENGINEERS	CONTRACTORS	EQUIPMENT SUPPLIERS	MANUFACTURER
Firm Characterization	Size and business focus	Size and business focus	Size and business focus	Size and business focus	Size and business focus	Size and business focus	Size and business focus
		Breakdown by type of construction	Breakdown by type of construction	Breakdown by type of construction	Breakdown by type of construction	Breakdown by type of construction	
	Preferred sources of information	Preferred sources of information	Preferred sources of information	Preferred sources of information	Preferred sources of information	Preferred sources of information	Preferred sources of information
	2 yr plan for building, remodeling, moving, or leasing new space						Plans for introducing high efficiency equipment
Awareness & Knowledge	Aware of EE product and design options	Aware of EE product and design options	Aware of EE product and design options	Aware of EE product and design options	Aware of EE product options	Aware of EE product options	Aware of EE product options
	Aware of EE services and products providers	Aware of EE services and products providers	Aware of EE services and products providers				
	Number of EE benefits known for products	Number of EE benefits known for products	Number of EE benefits known for products	Number of EE benefits known for products	Number of EE benefits known for products	Number of EE benefits known for products	

Continued

TOPIC AREA	BUILDING OWNERS	DEVELOPERS	ARCHITECTS	ENGINEERS	CONTRACTORS	EQUIPMENT SUPPLIERS	MANUFACTURER
Awareness & Knowledge (Cont.)	Number of problems attributed to EE products	Number of problems attributed to EE products	Number of problems attributed to EE products	Number of problems attributed to EE products	Number of problems attributed to EE products	Number of problems attributed to EE products	
	Awareness of life-cycle cost	Awareness of life-cycle cost	Awareness of life-cycle cost	Awareness of life-cycle cost	Awareness of life-cycle cost		
	Awareness of ACT 250 Energy requirements	Awareness of ACT 250 Energy requirements	Awareness of ACT 250 Energy requirements	Awareness of ACT 250 Energy requirements	Awareness of ACT 250 Energy requirements		
	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives	Awareness of VT EE measures incentives
	Awareness of EVT/BED	Awareness of EVT/BED	Awareness of EVT/BED	Awareness of EVT/BED	Awareness of EVT/BED	Awareness of EVT/BED	Awareness of EVT/BED
Practice	Inclusion of EE measures in projects	Inclusion of EE measures in projects	Inclusion of EE measures in projects	Inclusion of EE measures in projects	Inclusion of EE measures in projects	Availability of EE equipment	Number, levels & variety of EE products manufactured
	Use of VT EE measures incentives	Use of VT EE measures incentives	Use of VT EE measures incentives	Use of VT EE measures incentives	Use of VT EE measures incentives	Use of VT EE measures incentives	

Continued

TOPIC AREA	BUILDING OWNERS	DEVELOPERS	ARCHITECTS	ENGINEERS	CONTRACTORS	EQUIPMENT SUPPLIERS	MANUFACTURER
Practice (Cont.)	Concern for EE in leasing decisions	EE experience cited in marketing materials	EE experience cited in marketing materials	EE experience cited in marketing materials	EE experience cited in marketing materials	EE experience cited in marketing materials	Promotion of EE equipment in Vermont
	Use of life cycle cost to select energy products	Use of life cycle cost to select energy products	Use of life cycle cost to sell EE solutions	Use of life cycle cost to sell EE solutions		Use of life cycle cost to sell products	
			Use of sophisticated energy analysis tools	Use of sophisticated energy analysis tools			
						Number of EE products sold as percent of all products sold	Willingness to support higher standards for EE equipment

Appendix B

APPENDIX C

Telephone Survey Instruments

Appendix C

VT END USER C/I CONSTRUCTION SURVEY

(FROM PERMIT DATA: THOSE WITH NEW CONSTRUCTION, RENOVATION, REMODELING, AND ADDITIONS)

03/13/02

FROM DATABASE:

Name: _____

Firm: _____

Phone number: _____ Alt. Phone: _____

Project name: _____ Site name: _____

Site address: _____

New _____ Ren./Rem./Add. _____ Permit Issue Date: _____

Vermont Geography Code: _____ (1=Chittenden, 2=small urban, 3=rural)

CHECK QUOTAS BY GEOGRAPHY

Date of interview: _____

Ask for name on list, if one is provided.

My name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am talking with businesses that have obtained permits during the past few years for construction, renovation, remodeling, or additions. This is not a sales call. May I please speak with the owner of (firm name from list)?

{If refused:} Perhaps there is someone who works closely with the owner that I might talk with, someone who is knowledgeable about the building and was likely to have been involved in the construction project. May I speak with that person?

(Name _____ Phone: _____)

When contact is reached:

I am conducting research for the Vermont Department of Public Service. I am talking with businesses that have obtained permits during the past few years for construction, renovation, remodeling, or additions. This is not a sales call.

As a key energy user in the Vermont commercial/industrial market, I would like to ask you some questions. My questions will take about 20 minutes. Your responses will remain confidential.

Is this a good time for you to talk, or can we arrange a more convenient time?

(Set appointment:_____)

{If they are unwilling to talk, ask:} Is there someone else that I might speak with who who is knowledgeable about the building and was likely to have been involved in the construction project.

(Name _____ Phone: _____)

I understand that a permit for a construction project was taken by (firm name from list) from the Department of Labor and Industry in (year of permit from list). The property was located at (site address from list).

{In screening questions A through E, if someone answers "don't know", ask to speak with someone who might know the answer and start over.}

A. I want to clarify the relationship between the firm name and site address on the permit. Does (firm name from list) own and occupy the property at (site address from list), or does it own the property and lease it to a tenant that occupies it, or does (firm name) occupy this property that it has leased from the owner?
   1. Own and occupy
   2. Own and leases to a tenant
   3. Occupies space leased from the owner
   4. Manages the space for the owner and tenant

   {if 2, 3, or 4 ask:}

   B. Did your firm make the construction decisions for the project that received the permit?
      1. Yes
      2. No ==> thank and terminate

C. My questions concern the construction decisions and process. Are you knowledgeable about the project, or should I be speaking with someone else?
   1. Respondent is knowledgeable
   2. Referred to: (name and phone:) _____ (start over)

D. Was the project completed?
   1. Yes
   2. No

   {If D=1, skip to E}

   D2. Please describe what happened.

   D3. Thank and terminate

E. Which type of building best describes the building at (address from list). Is it an:
   1. Office
   2. Retail
   3. Industrial
   4. School (non-college)
   5. Warehouse
   6. Public buildings, health care, college, church or other institutional
   7. Multi-family building four stories or taller
   8. Multi-family building one, two or three stories ==> thank and terminate
   9. Other

---

1. Did the construction project involve: (read each and check one activity, or 5.)
   1. Construction of a new building
   2. An addition to an existing building
   3. A gut rehab or major renovation of an existing building
   4. A remodel of part of an existing building
   5. Several of these activities or some other activity (please describe:)
      Precodes:
      1. Construction of a new building
      2. An addition to an existing building
      3. A gut remodel or major renovation of an existing building
      4. A remodel of all or part of an existing building

If Q1 = 1 skip to 3

2. How old would you guess the building is? PROBE TO FIT
   1. Less than 5 years old
   2. Between 5 and 20 years old
   3. Older than 20 years
   4. Don't know

3. In about what year did your business occupy the building?
   19__/20__ {Note: 00=2000, 01=2001, 02=2002}

   DK ==> Probe:

   3a. Would you say it's been about
      1. Less than 5 years
      2. Between 5 and 10 years
      3. Between 10 and 20 years
      4. More than 20 years
      5. Don't know

4. What would you guess is the total square footage of the building?
   (Best guess is OK) READ IF HELPFUL
   1. Under 5,000 sq. ft.
   2. 5,000 to just under 10,000 sq. ft.
   3. 10,000 to just under 25,000 sq. ft
   4. 25,000 to just under 75,000 sq. ft
   5. 75,000 sq. ft. or more
   6. Don't know

If Q1=1 skip to 6

5. What would you guess is the total square footage of the project area?
   (Best guess is OK) READ IF HELPFUL
   1. Under 10,000 sq. ft.
   2. 10,000 to just under 25,000 sq. ft.
   3. 25,000 to just under 50,000 sq. ft
   4. 50,000 to just under 100,000 sq. ft
   5. 100,000 sq. ft. or more
   6. Don't know

6. Which of the following professionals did you use on the project?
   a. Architect
      1. Yes
      2. No
      3. DK

   b. General contractor
      1. Yes
      2. No
      3. DK

   c. Heating and cooling contractor
      1. Yes
      2. No
      3. DK

   d. Mechanical engineer
      1. Yes
      2. No
      3. DK

   e. Lighting or electrical contractor
      1. Yes
      2. No
      3. DK

   f. Electrical engineer
      1. Yes
      2. No
      3. DK

{Ask if 6a or 6b or 6c or 6d =1; otherwise, skip to 8}

7. For each of the following professionals that you used, please rate how much influence they had on the decision about the type of heating and cooling equipment to install in the building? Use a scale of 0-5, where 0 indicates not at all involved, 1 indicates very little influence and 5 indicates the professional made the final project decision with you or for you. (USE "NA" IF NO HVAC WAS INSTALLED)

   {Ask if 6a = 1; otherwise skip to 7b}

   7a. Architect 0 1 2 3 4 5 DK NA

{Ask if 6b = 1; otherwise skip to 7c}

7b.	General Contractor	0	1	2	3	4	5
	DK NA						

{Ask if 6c = 1; otherwise skip to 7d}

7c.	Heating and cooling contractor	0	1	2	3	4	5
	DK NA						

{Ask if 6d = 1; otherwise skip to 8}

7d.	Mechanical Engineer	0	1	2	3	4	5
DK	NA						

{Ask if 6a or 6b or 6e or 6f =1; otherwise, skip to 9}

8. Similarly, please rate how much influence they had on your decision about the type of lighting equipment to install in the building? Use a scale of 0-5, where 0 indicates not at all involved, 1 indicates very little influence and 5 indicates the professional made the final decision with you or for you. (USE "NA" IF NO LIGHTING WAS INSTALLED)

{Ask if 6a = 1; otherwise skip to 8b}

8a.	Architect	0	1	2	3	4	5
DK	NA						

{Ask if 6b = 1; otherwise skip to 8c}

8b.	General Contractor	0	1	2	3	4	5
DK	NA						

{Ask if 6e = 1; otherwise skip to 8d}

8c.	Lighting or electrical contractor	0	1	2	3	4	5
DK	NA						

{Ask if 6f = 1; otherwise skip to 9}

8d.	Electrical Engineer	0	1	2	3	4	5
DK	NA						

9. Did you discuss the energy that your newly constructed space would use with any of these building professionals?
   1. Yes
   2. No
   3. DK

{If 9 = 2 or 3, skip to 12}

10a. With whom did you discuss energy use? (don't read; check all that apply; probe: any one else?)

1. Architect
2. General contractor
3. Heating and cooling contractor
4. Mechanical engineer
5. Lighting contractor
6. Electrical engineer
7. don't know ==> Probe: was it the architect? The general contractor?

10b. What did they say?
(ask as open ended, use these as precodes)

1. Encourage considering energy-efficient designs and equipment
2. Discourage considering energy-efficient designs and equipment
3. Say that features or equipment he or she was recommending for other reasons was also energy-efficient
4. Say that standard construction practices are energy-efficient
5. Explain energy efficiency
6. other (specify)

{Ask if 10b = 1); otherwise, skip to 11}

10c. Which professional encouraged the consideration of energy efficiency? (don't read; check all that apply; probe: any one else?)

1. Architect
2. General contractor
4. Heating and cooling contractor
4. Mechanical engineer
5. Lighting contractor
6. Electrical engineer
7. don't know ==> Probe: was it the architect? The general contractor?

{Ask if 10b = 2); otherwise, skip to 11}

10d. Which professional discouraged the consideration of energy efficiency? (don't read; check all that apply; probe: any one else?)

1. Architect
2. General contractor
5. Heating and cooling contractor
4. Mechanical engineer
5. Lighting contractor
6. Electrical engineer
7. don't know ==> Probe: was it the architect? The general contractor?

11a. Did you have any specific requirements for energy use when you talked to the building professionals?

1. Yes
2. No
3. DK

{If Q11a=2 or 3, skip to 12}

11b. What were your requirements?
(ask as open ended, use these as precodes)

1. To be more energy efficient than your space previously was
2. To be more energy efficient than buildings like yours typically are
3. To have an energy budget or a target for energy use
4. To do what could be done within budget constraints
5. To analyze the cost-effectiveness of features and equipment
6. Other (specify____)

12. I am going to read a list of equipment that could be installed in a building. When I read the name, please indicate if you have ever heard of this equipment before.

1=Yes
2=No

a. Low-E glass for windows
b. T-8 lights
c. Electronic ballasts for lights
d. Occupancy Sensors to control lights
e. Compact fluorescent lights
f. L.E.D Exit signs
g. Design features other than windows and skylights to bring daylight into the building

h. Multi-level switching controls for lighting
i. Economizer for heating and cooling system
j. Condensing furnace or boiler
k. Programmable thermostat
l. Energy management control system for heating and cooling (aka EMS)
m. Distributed generation

13. I am interested in a few of the systems that may have been involved in the construction project. Did the project involve:

a. New windows
   1. Yes
   2. No
   3. DK

b. New heating equipment or changes to the heating system
   1. Yes
   2. No
   3. DK

c. New lighting equipment
   1. Yes
   2. No
   3. DK

d. New electronic controls for lighting or heating or cooling
   1. Yes
   2. No
   4. DK

{To the interviewer: the next 14 questions (Q13-26) follow the same format: did you use X; did you talk about using X. Please reduce the burden on the respondent by shortening the questions when it is clear the respondent understands the pattern of questioning.}

14a. Did the project include design features to bring daylight into the building—other than windows and skylights?
   1. Yes
   2. No or DK

{Ask if 14a=2; otherwise, skip to 14c}

14b. Did you discuss bringing daylight into the building in other ways than using windows and skylights?

1. Yes
2. No or DK

{Ask if 13a=1; otherwise skip to 16}

15a. Did you use low-e glass in the project?

1. Yes
2. No or DK

{Ask if 15a=2; otherwise skip to 16}

15b. Did you discuss using low-e glass with the project designer or contractor?

1. Yes
2. No or DK

{Ask if 13b=1; otherwise skip to 20}

16a. Did you use an economizer for heating and cooling systems in the project?

1. Yes
2. No or DK

{Ask if 16a=2; otherwise skip to 17}

16b. Did you discuss using an economizer with the project designer or contractor?

1. Yes
2. No or DK

17a. Did you use a condensing furnace or boiler in the project?

1. Yes
2. No or DK

{Ask if 17a=2; otherwise skip to 18}

17b. Did you discuss using one with the designer or contractor?

1. Yes
2. No or DK

18a. How about programmable thermostats? {If necessary, add:}Did you use programmable thermostats in the project?

1. Yes
2. No or DK

{Ask if 18a=2; otherwise skip to 19}
18b. Did you discuss using one with the designer or contractor?
1. Yes
2. No or DK

19a. Did you use an energy management control system for heating and cooling? They are also called EMS.
1. Yes
2. No or DK

{Ask if 19a=2; otherwise skip to 20}
19b. Did you discuss using one with the designer or contractor?
1. Yes
2. No or DK

{Ask only if E=3; otherwise, skip to 21}
The next question concerns your motors and drives.
20a. Did you use variable frequency drives in the project? They are also called VFDs?
1. Yes
2. No or DK

{Ask if 20a=2; otherwise skip to 21}
20b. Did you discuss using them with the project designer or contractor?
1. Yes
2. No or DK

{Ask only if 12b=1; otherwise, skip to 28}
The next questions concern your lighting.
21a. Did you use T-8 lights in the project?
1. Yes
2. No or DK

{Ask if 21a=2; otherwise skip to 22}
21b. Did you discuss using T-8 lights with the project designer or contractor?
1. Yes
2. No or DK

22a. How about electronic ballasts? Did you use them?
1. Yes
2. No or DK

{Ask if 22a=2; otherwise skip to 23}
22b. Did you discuss using them with the designer or contractor?
1. Yes
2. No or DK

23a. What about occupancy sensors? {If necessary, add:} Did you use occupancy sensors in the project?
1. Yes
2. No or DK

{Ask if 23a=2; otherwise skip to 24}
23b. Did you discuss using them with the designer or contractor?
1. Yes
2. No or DK

24a. Did you use compact fluorescent lights. They are also called CFLs?
1. Yes
2. No or DK

{Ask if 24a=2; otherwise skip to 25}
24b. Did you discuss using them with the designer or contractor?
1. Yes
2. No or DK

25a. Did you use LED exit signs in the project?
1. Yes
2. No or DK

{Ask if 25a=2; otherwise skip to 26}
25b. Did you discuss using them with the designer or contractor?
1. Yes
2. No or DK

26a. Did the project use multi-level switching controls for lighting?
1. Yes
2. No or DK

{Ask if 26a=2; otherwise skip to 28}
26b. Did you discuss using them with the project designer or contractor?
1. Yes
2. No or DK

27a. Have you seen or heard of any labels or logos about energy on business equipment or building materials?
1. Yes
2. No or DK

{If Q27a=2, skip to Q28}

27b. What labels or logos have you heard of? (Check all that apply; probe: Anything else?)
1. Energy Star (skip to 29)
2. Energy Guide
3. Other

{If Q27b=1, skip to Q29}

28. Have you ever heard or seen the Energy Star label?
1. Yes (skip to 29)
2. No
3. DK

{If Q27b=1 or Q28=1, skip to Q29)

28a. The Energy Star label is on some new electronic equipment and other building equipment and products. It is a semi-circle with the word "ENERGY" and a star on it. Often the background is a blue and green globe. Now, do you recall having seen or heard of the ENERGY STAR label?
1. Yes
2. No or DK

{If Q28=2, skip to Q30}

29. What messages come to mind when you see the Energy Star label? (Check all that apply; probe: Anything else?)
{to Action Research, RIA can provide pre-codes}

My next questions concern the ACT 250 process.

30a. Did the project require obtaining ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
1. Yes
2. No
3. DK

30b. Have you been involved in any other projects that required the ACT 250 permit?
1. Yes
2. No
3. DK

{ask if Q30a=1 or Q30b=1; otherwise skip to 32}
30c. How many projects?

{Ask if Q30a or 30b=1; otherwise, skip to 32}
31. In your opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency being incorporated into projects than without ACT 250?
1. More
2. The same
3. Less
4. DK

32a. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
1. Yes
2. No or DK

{ask if Q32a=1; otherwise skip to 33}
32b. What is the name of the organization?
1. Efficiency Vermont
2. Vermont Efficiency
3. EVT
4. The Efficiency Utility
5. Other

{ask if Q32b = 5; otherwise, skip to 34}
33. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
1. Yes
2. No or DK

{ask if Q33=1; otherwise, skip to 39}

34a. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?

1. Yes
2. No
3. DK

{ask if 34a=1, otherwise, skip to 35}

34b. Which one?

1. Efficiency Vermont
2. Burlington Electric Department, or
3. Both

34c. Did you contact them or did they contact you?

1. I contacted them
2. They contacted me
3. Both

35. Have you conducted any projects with Efficiency Vermont or Burlington Electric Department's assistance?

1. Yes
2. No
3. DK

{if Q35=2 or 3, skip to 36}

35a. Who recommended you use EVT or BED? (Do not read.)

1. Architect
2. Consulting engineer
3. General contractor
4. Other contractor
5. Someone on your staff
6. Colleague at another company
7. Other

36. Which of the following services have you used?

36a. Attended Building Solutions conference in February

1. Yes
2. No
3. DK

36b. Technical assistance for a project
1. Yes
2. No
3. DK

{Ask if 35b=1; otherwise, skip to 35d}
36c. Was that project (check all that apply)
1. An ACT 250 new construction or renovation project
2. A NON ACT 250 new construction or renovation project
3. A remodeling or equipment replacement project
4. Other

36d. Did you get rebates for efficient equipment?
1. Yes
2. No
3. DK

{Ask if 36d=1; otherwise skip to 37}
36e. Did you get rebates for (check all that apply)
1. Lighting
2. HVAC
3. Motors
4. Other
5. DK

37. On a scale of 1 to 5 where 1 is not at all satisfied and 5 is very satisfied, How satisfied were you with.

a. Efficiency Vermont's knowledge of energy efficiency solutions 1 2 3 4 5

b. Efficiency Vermont's responsiveness to our project 1 2 3 4 5

c. The usefulness of information provided by Efficiency Vermont 1 2 3 4 5

d. The quality of services provided by Efficiency Vermont 1 2 3 4 5

e. What was your experience with Efficiency Vermont?

38. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency Vermont or BED assistance on a project in the future?
1. Very likely
2. Somewhat likely
3. Not at all likely
4. DK

The next questions concern your attitudes about energy.

39. I am going to read you several characteristics of lighting technologies that may be important to you. Using a scale of 1-5, where 1 is not at all important and 5 is very important. Please tell me how important each factor is?
1= not at all important
5= very important

a.	Initial cost	1	2	3	4	5
b.	Energy savings potential	1	2	3	4	5
c.	Availability	1	2	3	4	5
d.	Quality	1	2	3	4	5
e.	Style	1	2	3	4	5
f.	Compatibility with existing fixtures	1	2	3	4	5
g.	Pattern of light distribution	1	2	3	4	5
h.	Operating costs	1	2	3	4	5
i.	Maintenance effort or cost	1	2	3	4	5

40. When you think of energy efficient lighting what are the characteristics that come to mind? (Open end)

41. Now I am going to read you several factors of heating and cooling equipment you may think are important. Using a scale of 1-5, where 1 is not at all important and 5 is very important. Please rate each of the following features of heating and cooling equipment.

a.	Energy savings	1	2	3	4	5
b.	Initial cost	1	2	3	4	5
c.	Availability	1	2	3	4	5
d.	Durability	1	2	3	4	5
e.	Life cycle cost	1	2	3	4	5
f.	Comfort	1	2	3	4	5
g.	Maintenance effort or cost	1	2	3	4	5

42. When you think of energy efficient heating and cooling equipment what are the characteristics that come to mind? (Open end)

43. In the past year, have you been less concerned, more concerned or had about the same level of concern for energy use compared with previous years?
1. Less concerned
2. More concerned
3. Or about the same level of concern

43a. Why do you say that?

{If QA=1, skip to 47}

44. Who pays the utility bills for electricity and natural gas for the building, the owner or the tenants? (Do not read)
    1. Owner does
    2. Tenant does
    3. Owner pays for common areas and tenant pays for unit (e.g., multi-family)
    4. DK

{If QA=3, skip to 46}

45. Do you consider the energy efficiency of your building an important factor for your tenants?
    1. Yes
    2. No
    3. DK

{If QA=2 or 4, skip to 47}

46. Is the energy efficiency of your building a factor that is important to you as a tenant?
    1. Yes
    2. No
    3. DK

47. Before we close, we are asking a select set of building owners if they would be willing to participate in an on-site survey of their building. This on-site survey will take about four hours and will involve one of our engineers visiting your building, walking around and in the building and doing a brief inventory of the type of equipment in the building, no one needs to accompany them during this visit. Would you be willing to participate?
    1. Yes
    2. No

{Ask if 46=2}

48. For those owners who are willing to participate and are subsequently selected for the on-site, we will be offering a thank you gift (of.....). Would you be willing to participate?
    1. Yes
    2. No

{If 47 or 48=1}
Thank you for your willingness to participate. Someone from SAIC will be calling in the next three weeks if your firm is selected for an on-site.

IF YES: Who should we contact about providing us access to your facility?

IF SO: Name _____ Phone _____

Thank you for your time.

REAL ESTATE END USER SURVEY - GDS

Questionnaire # _____ (1-4)

Q.1 My name is _____ with Action Research. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with the owner or president about the construction and equipment in the buildings that **[NAME OF FIRM FROM LIST]** develops or manages. This is not a sales call. May I please speak with the owner of **[NAME OF FIRM FROM LIST]**?

[IF REFUSED:] Perhaps there is someone who works closely with the owner that I might talk with, someone who is knowledgeable about the construction and buildings developed or managed by your company. May I speak with that person? **[IF NEW CONTACT RECORD NAME AND NUMBER ON SAMPLE]**

(5)
❑1 **Yes**
❑2 **No [IF REFERRED TO SOMEONE ELS E; RECORD NEW INFO. ON SAMPLE]**

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 1]

Q.2 **[IF NEW CONTACT IS REACHED:]**
I am conducting research for the Vermont Department of Public Service. I am talking with real estate developers and managers about the construction of the buildings they develop and the major equipment in the buildings they manage. This is not a sales call.

[ALL]
I would like to ask you some questions. My questions will take about 20 minutes. Your responses will remain confidential.

(6)
❑1 **Continue**

Q.3 A) Does your company develop properties and construct buildings in Vermont for multi-family, commercial, industrial, or institutional use?

(7)
❑1 **Yes, multi-family, commercial, industrial, or institutional**
❑2 **No**

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 6]

Q.4 B) I am going to read a list of types of buildings. Please tell me which type of building best describes the type of buildings your firm develops in Vermont? Do you develop **[READ LIST]**

(8-16)
- ❑ 1 **Offices**
- ❑ 2 **Retail**
- ❑ 3 **Industrial**
- ❑ 4 **School (non-college)**
- ❑ 5 **Warehouse**
- ❑ 6 **Public buildings, health care, college, church or other inst.**
- ❑ 7 **Multi-family building four stories or taller**
- ❑ 8 **Multi-family building 1,2, or 3 stories**
- ❑ 9 **[VOL] Other**

Q.5 C) I want to clarify the relationship between your firm and the buildings you develop in Vermont... Does your firm...

Develop and then **own** property **and** lease to tenants,
Develop property for sale to a known owner--build to suite,
Develop property for lease to a known owner--build to suite,
Develop property and sell on the open market,
Or something else?

(17)
- ❑ 1 **Develop and own property and lease to tenants**
- ❑ 2 **Develop for sale to a known owner, build to suite**
- ❑ 3 **Develop for lease to a known owner, build to suite**
- ❑ 4 **Develop and sell on open market**
- ❑ 5 **Something else**
- ❑ 6 **No one in firm knows [PROBE FOR PERSON WHO KNOWS]**

[IF THE ANSWER IS 6, THEN SKIP TO QUESTION 5]

Q.6 D) Does your company manage multi-family, commercial, institutional or industrial properties in Vermont?

(18)
- ❑ 1 **Yes**
- ❑ 2 **No**

[IF THE ANSWER TO QUESTION 3 IS 2, AND...]
[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 6]
[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 10]

Q.7 E) I am going to read a list of types of buildings. Please tell me which type(s) of building best describes the buildings your company manages in Vermont? Do you manage **[READ LIST]**

(19-27)
- ❑ 1 **Offices**
- ❑ 2 **Retail**
- ❑ 3 **Industrial**
- ❑ 4 **School (non-college)**
- ❑ 5 **Warehouse**
- ❑ 6 **Public buildings, health care, college, church or other inst.**
- ❑ 7 **Multi-family building four stories or taller**
- ❑ 8 **Multi-family building 1,2, or 3 stories**
- ❑ 9 **[VOL] Other [such as skiing facilities]**

[IF THE ANSWER TO QUESTION 4 IS NOT 1-7 OR 9, AND...]
[IF THE ANSWER IS NOT 1-7 OR 9, THEN SKIP TO QUESTION 7]

Q.8 For those properties that you manage in Vermont, what percent does your firm: **[READ LIST; INPUT PERCENTAGE FOR EACH] [IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]**

Own and manage? ..... _____ (28-30)
Manage for an owner? ..... _____ (31-33)
Manage for a real estate investment trust? .. _____ (34-36)
Another type of management situation? ..... _____ (37-39)

Q.9 **[ASK ONLY IF GAVE % TO "OTHER TYPE OF MANAGEMENT]**

What is the other type of management situation you have? **[PROBE FOR DETAILS; RECORD RESPONSE VERBATIM]**

_____ (40-289)

_____

_____

_____

Q.10 In the past two years, has your firm been in the market for lighting systems? By that, I mean have you purchased, contracted for, or shopped for lighting systems for any of your Vermont properties?

(290)
- ❑ 1 **Yes**
- ❑ 2 **No**

Q.11 In the past two years, has your firm purchased, shopped for, or contracted for **controls** for the lighting systems for any of your Vermont properties?

(291)
❑ 1 **Yes** ❑ 2 **No**

Q.12 In the past two years, has your firm shopped for or talked to a designer or contractor about any of the following equipment or construction activities for any of your Vermont properties.

(292)
❑ 1 **Continue**

Q.13 Changes to windows?

(293)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.14 How about...

Changes to roof, or insulation levels?

(294)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.15 Did your firm shop for or talk to a designer or contractor about...

Changes to the building structure of any of your properties in Vermont?

(295)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.16 How about...

Changes to heating or cooling equipment?

(296)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.17 Did your firm shop for or talk to a designer or contractor about...

Changes to ventilation systems?

(297)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.18 Did your firm shop for or talk to a designer or contractor about...

Changes to refrigeration systems?

(298)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.19 Did your firm shop for or talk to a designer or contractor about...

Changes in motors or variable speed drives?

(299)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.20 Did your firm shop for or talk to a designer or contractor about...

Changes to any other major electrical equipment such as pumps, industrial equipment, or snow-making equipment?

(300)
- ❑ 1 **Yes - shopped for or talked to designer or contractor**
- ❑ 2 **No - did not**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.21 The questions in this survey concern the equipment in and the construction of the buildings your firm developed or managed in Vermont over the past 12 months.

(301)
- ❑ 1 **Continue**

[IF THE ANSWER TO QUESTION 3 IS 2, AND...]
[IF THE ANSWER TO QUESTION 6 IS 1, THEN SKIP TO QUESTION 24]

Q.22 What is the total square footage of <u>all</u> the property that you developed in Vermont over the past 12 months?

[BEST GUESS IS OK; READ IF HELPFUL]

(302)
- ❑ 1 **Under 5,000 square feet**
- ❑ 2 **5,000 to just under 10,000 square feet**
- ❑ 3 **10,000 to just under 25,000 square feet**
- ❑ 4 **25,000 to just under 75,000 square feet**
- ❑ 5 **75,000 square feet or more**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.23 Using a scale of 1 to 10, <u>where 1 is not at all important and 10 is very important</u>, as a developer of buildings how important is energy efficiency to you?

(303-304)
- ❑ 01 **1 - Not at all important**
- ❑ 02 **2**
- ❑ 03 **3**
- ❑ 04 **4**
- ❑ 05 **5**
- ❑ 06 **6**
- ❑ 07 **7**
- ❑ 08 **8**
- ❑ 09 **9**
- ❑ 10 **10 - Very important**
- ❑ 98 **[VOL] Don't know**
- ❑ 99 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 3 IS 1, AND...]
[IF THE ANSWER TO QUESTION 6 IS 2, THEN SKIP TO QUESTION 30]

Q.24 What is the total square footage of <u>all</u> the property that you currently <u>manage</u> in Vermont ?

[BEST GUESS IS OK; READ IF HELPFUL]

(305)
- ❑ 1 **Under 5,000 square feet**
- ❑ 2 **5,000 to just under 10,000 square feet**
- ❑ 3 **10,000 to just under 25,000 square feet**
- ❑ 4 **25,000 to just under 75,000 square feet**
- ❑ 5 **75,000 square feet or more**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.25 Over the next two years are you planning to make, or are you in the process of making, any of the following changes to the buildings that you manage?

A) Remodeling?

(306)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.26 How about:

B) Constructing a new building?

(307)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.27 How about:

C) Constructing a new addition?

[IF NECESSARY REMIND YOU ARE ASKING IF THEY ARE PLANNING TO OR ARE IN THE PROCESS OF MAKING THIS CHANGE IN THE NEXT TWO YEARS]

(308)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 5 IS 1, THEN SKIP TO QUESTION 30]

Q.28 Who pays the utility bills for electricity and natural gas for the buildings you manage, the owner or the tenants **[DO NOT READ LIST]**

(309)
- ❑ 1 **Owner does**
- ❑ 2 **Tenant does**
- ❑ 3 **[VOL] Owner pays for common areas, tenant pays for unit**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.29 Using a scale of 1 to 10, where 1 is not at all important and 10 is very important, as a manager of buildings how important is energy efficiency to you?

(310-311)
- ❑ 01 **1 - not at all important**
- ❑ 02 **2**
- ❑ 03 **3**
- ❑ 04 **4**
- ❑ 05 **5**
- ❑ 06 **6**
- ❑ 07 **7**
- ❑ 08 **8**
- ❑ 09 **9**
- ❑ 10 **10- very important**
- ❑ 98 **[VOL] Don't know**
- ❑ 99 **[VOL] Refused**

Q.30 Now I am going to read a list of equipment that could be installed in a building. When I read the name, please indicate if you have ever heard of this equipment before.

[FOR ALL QUESTIONS IN SERIES; IF RESPONDENT IS UNSURE OR UNDECIDED CODE AS "NO" RESPONSE]

(312)
- ❑ 1 **Continue**

[ASK QUESTIONS 31 TO 43 IN RANDOM ORDER]

Q.31 A) Low-e glass for windows?

(313)
- ❑ 1 **Yes**
- ❑ 2 **No**

Q.32 B) T-8 lights?

(314)
- ❑ 1 **Yes**
- ❑ 2 **No**

Q.33 C) Ever heard of electronic ballasts for lights?

(315)
❑1 **Yes** ❑2 **No**

Q.34 D) How about occupancy sensors to control lights?

(316)
❑1 **Yes** ❑2 **No**

Q.35 E) Compact fluorescent lights?

(317)
❑1 **Yes** ❑2 **No**

Q.36 F) Ever heard of L.E.D exit signs?

(318)
❑1 **Yes** ❑2 **No**

Q.37 G) Design features other than windows and skylights to bring daylight into the building?

(319)
❑1 **Yes** ❑2 **No**

Q.38 H) How about multi-level switching controls for lighting?

(320)
❑1 **Yes** ❑2 **No**

Q.39 I) Ever heard of an economizer for heating and cooling systems?

(321)
❑1 **Yes** ❑2 **No**

Q.40 J) Ever heard of a condensing furnace or boiler?

(322)
❑1 **Yes** ❑2 **No**

Q.41 K) How about a programmable thermostat?

(323)
❑ 1 **Yes** ❑ 2 **No**

Q.42 L) Ever heard of an energy management control system for heating and cooling (a.k.a EMS)?

(324)
❑ 1 **Yes** ❑ 2 **No**

Q.43 M) How about distributed generation?

(325)
❑ 1 **Yes** ❑ 2 **No**

[IF THE ANSWER TO QUESTION 13 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 45]

Q.44 I am interested in learning about some of the equipment that you may have purchased and installed for any of your properties in Vermont during the past two years. Have you installed:

a) New windows or made changes to your windows?

(326)
❑ 1 **Yes** ❑ 8 **[VOL] Don't know**
❑ 2 **No** ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 16 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 46]

Q.45 How about:

b) Installed new heating equipment or made changes to your heating system?

[IF NECESSARY REMIND THEM YOU ARE ASKING IF THIS HAS BEEN DONE IN THE PAST TWO YEARS]

(327)
❑ 1 **Yes** ❑ 8 **[VOL] Don't know**
❑ 2 **No** ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 10 IS 2 OR 8 OR 9, AND...]
[IF THE ANSWER TO QUESTION 11 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 47]

Q.46 In the past two years have you installed:

c) New lighting equipment or made changes to your lighting system?

(328)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.47 **[CAUTION: BEGINNING REPETITIVE SERIES; OK TO SHORTEN QUESTIONS WHEN IT IS CLEAR RESPONDENT UNDERSTANDS]**

(329)
❑ 1 **Continue**

[IF THE ANSWER TO QUESTION 44 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 51]
[IF THE ANSWER TO QUESTION 13 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 51]

Q.48 Did you install low-e glass windows?

(330)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 48 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 50]

Q.49 What percent of windows that you installed in the past 2 years were low-e glass windows?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of windows installed that were low-e glass .. _____ (331-333)

[IF THE ANSWER TO QUESTION 48 IS 1, THEN SKIP TO QUESTION 51]

Q.50 Did you discuss using them with your supplier, contractor or project designer?

(334)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 45 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 63]
[IF THE ANSWER TO QUESTION 16 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 63]

Q.51 Did you install an economizer for heating and cooling systems?

(335)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 51 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 53]

Q.52 What percent of the heating and cooling systems you installed in the past 2 years that could use an economizer, include an economizer?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of systems that use an economizer? .. _____ (336-338)

[IF THE ANSWER TO QUESTION 51 IS 1, THEN SKIP TO QUESTION 54]

Q.53 Did you discuss using an economizer with your supplier, contractor or project designer?

(339)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.54 Did you install a condensing furnace or boiler?

(340)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 54 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 56]

Q.55 What percent of the furnaces or boilers you installed in the past 2 years are condensing furnaces or boilers?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of furnaces/boilers that are condensing .. _____ (341-343)

[IF THE ANSWER TO QUESTION 54 IS 1, THEN SKIP TO QUESTION 57]

Q.56 Did you discuss using them with your supplier, contractor or project designer?

(344)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.57 How about programmable thermostats?

[IF NECESSARY, ADD: "DID YOU INSTALL PROGRAMMABLE THERMOSTATS"?]

(345)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 57 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 59]

Q.58 What percent of the thermostats you have installed in the past 2 years are programmable?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of thermostats that are programmable .. _____ (346-348)

[IF THE ANSWER TO QUESTION 57 IS 1, THEN SKIP TO QUESTION 60]

Q.59 Did you discuss using them with your supplier, contractor, or project designer?

(349)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.60 Did you install an energy management control system for heating and cooling? They are also called EMS.

(350)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 60 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 62]

Q.61 What percent of the heating and cooling systems you installed in the past 2 years that could use an EMS, include an EMS?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of systems that include an EMS .. _____ (351-353)

[IF THE ANSWER TO QUESTION 60 IS 1, THEN SKIP TO QUESTION 63]

Q.62 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY, ADD: "DID YOU DISCUSS USING AN ENERGY MANAGEMENT CONTROL SYSTEM FOR HEATING AND COOLING WITH THE DESIGNER OR CONTRACTOR?"]

(354)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 46 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 82]
[IF THE ANSWER TO QUESTION 10 IS 2 OR 8 OR 9, AND...]
[IF THE ANSWER TO QUESTION 11 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 82]

Q.63 The next question concerns your lighting.

(355)
- ❑ 1 **Continue**

Q.64 Did you install T-8 lights?

(356)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 64 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 66]

Q.65 What percent of the lighting you installed in the past 2 years use T-8 lights?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of lighting that use T-8 lights .. _____ (357-359)

[IF THE ANSWER TO QUESTION 64 IS 1, THEN SKIP TO QUESTION 67]

Q.66 Did you discuss using T-8 lights with your supplier, contractor, or project designer?

(360)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.67 How about electronic ballasts? Did you install them?

(361)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 67 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 69]

Q.68 What percent of the lighting systems that you installed in the past 2 years use electronic ballasts?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of lighting that use electronic ballasts .. _____ (362-364)

[IF THE ANSWER TO QUESTION 67 IS 1, THEN SKIP TO QUESTION 70]

Q.69 Did you discuss using them with with your supplier, contractor, or project designer?

[IF NECESSARY, REMIND RESPONDENT YOU ARE ASKING ABOUT ELECTRONIC BALLASTS]

(365)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.70 What about occupancy sensors?

[IF NECESSARY, ADD: "DID YOU INSTALL OCCUPANCY SENSORS?"]

(366)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 70 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 72]

Q.71 What percent of the lighting systems that you installed in the past 2 years use occupancy sensors?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of lighting that use occupancy sensors .. _____ (367-369)

[IF THE ANSWER TO QUESTION 70 IS 1, THEN SKIP TO QUESTION 73]

Q.72 Did you discuss using them with your supplier, contractor or project designer?

[IF NECESSARY, REMIND RESPONDENT YOU ARE ASKING ABOUT OCCUPANCY SENSORS]

(370)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.73 Did you install compact fluorescent lights? They are also called CFLs?

(371)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 73 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 75]

Q.74 What percent of the lighting systems you installed in the past 2 years include CFLs?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of lighting systems that include CFLs .. _____ (372-374)

[IF THE ANSWER TO QUESTION 73 IS 1, THEN SKIP TO QUESTION 76]

Q.75 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT COMPACT FLUORESCENT LIGHTS OR CFLS]

(375)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.76 Did you install L.E.D exit signs?

(376)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 76 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 78]

Q.77 What percent of the exit signs you installed in the past 2 years use L.E.D.s?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of exit signs that use L.E.D.s .. _____ (377-379)

[IF THE ANSWER TO QUESTION 76 IS 1, THEN SKIP TO QUESTION 79]

Q.78 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT LED EXIT SIGNS]

(380)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.79 Did you install multi-level switching controls for lighting?

(381)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 79 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 81]

Q.80 What percent of the lighting systems you installed in the past 2 years use multi-level switching controls?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of lighting systems use multi-level switching .. _____ (382-384)

[IF THE ANSWER TO QUESTION 79 IS 1, THEN SKIP TO QUESTION 82]

Q.81 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT MULTI-LEVEL SWITCHING CONTROLS FOR LIGHTING]

(385)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 4 IS NOT 3, AND...]
[IF THE ANSWER TO QUESTION 7 IS NOT 3, THEN SKIP TO QUESTION 85]

Q.82 The next question concerns your motors and drives.

Did you install variable frequency drives in the past two years? They are also called VFDs.

(386)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 82 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 84]

Q.83 What percent of the motors you installed in the past 2 years used Variable Frequency Drives (VFDs)?

[PROBE FOR APPROXIMATE PERCENTAGE; IF DON'T KNOW ENTER 998, IF REFUSED ENTER 999]

Percent of motors use VFDs .._____ (387-389)

[IF THE ANSWER TO QUESTION 82 IS 1, THEN SKIP TO QUESTION 85]

Q.84 Did you discuss using them with your supplier, the project designer or contractor?

(390)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.85 The next questions concern your attitudes about energy.

(391)
❑ 1 **Continue**

Q.86 I am going to read you several characteristics of lighting technologies that may be important to you. Using a scale of 1 to 5, where 1 is not at all important and 5 is very important. Please tell me how important each factor is.

(392)
❑ 1 **Continue**

[ASK QUESTIONS 87 TO 95 IN RANDOM ORDER]

Q.87 How important is

A) Initial cost?

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(393)
- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.88 How important is

B) Energy savings potential?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(394)
- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.89 How important is

C) Availability?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(395)
- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.90 How about

D) Quality?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(396)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.91 How important is

E) Style?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(397)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.92 How important is

F) Compatibility with existing fixtures?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(398)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.93 How about

G) Pattern of light distribution?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(399)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.94 How important is

H) Operating costs?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(400)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.95 How important is

I) Maintenance effort or cost?

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(401)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.96 When you think of energy efficient lighting what are the characteristics that come to mind? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (402-901)

_____

_____

_____

_____

_____

_____

Q.97 Now I'm going to read you several factors of **heating and cooling equipment** you may think are important. Using a scale of 1 to 5, where 1 is not at all important and 5 is very important, please rate each of the following features of heating and cooling equipment.

(902)
❑ 1 **Continue**

[ASK QUESTIONS 98 TO 104 IN RANDOM ORDER]

Q.98 How important is...

A) Energy savings?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(903)
❑ 1 **1 - Not at all important**
❑ 2 **2**
❑ 3 **3**
❑ 4 **4**
❑ 5 **5 - Very important**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.99 How important is...

B) Initial cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(904)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.100 How about...

C) Availability?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(905)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.101 How important is...

D) Durability?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(906)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

❑ 4 **4**

Q.102 How important is...

E) Life cycle cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(907)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.103 How important is...

F) Comfort?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(908)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.104 How important is...

G) Maintenance effort or cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(909)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.105 When you think of energy efficient heating and cooling equipment what are the characteristics that come to mind? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (910-1409)

_____

_____

_____

_____

_____

_____

Q.106 In the past year, have you been less concerned, more concerned or had about the same level of concern for energy use compared with previous years?

(1410)

- ❑ 1 **Less concerned**
- ❑ 2 **More concerned**
- ❑ 3 **The same level of concern**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.107 Have you seen or heard of any labels or logos about energy on business equipment or building materials?

(1411)

- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 107 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 109]

Q.108 What labels or logos have you heard of? **[DO NOT READ; SELECT ALL THAT APPLY; PROBE WITH "ANYTHING ELSE?"]**

(1412-1414)
- ❑1 **Energy Star**
- ❑2 **Energy Guide**
- ❑3 **Other**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 108 IS 1, THEN SKIP TO QUESTION 111]

Q.109 Have you ever heard or seen the Energy Star label?

(1415)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER IS 1, THEN SKIP TO QUESTION 111]

Q.110 The Energy Star label is on some new electronic equipment and other building equipment and products. It is a semicircle with the word "ENERGY" and a star on it. Often the background is a blue and green globe. Now, do you recall having seen or heard of the Energy Star label?

(1416)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 113]

Q.111 What messages come to mind when you see the Energy Star label? **[DO NOT READ; SELECT ALL THAT APPLY]**

(1417-1423)
- ❑1 **Conserves energy/energy efficient**
- ❑2 **Savings on energy bill**
- ❑3 **Uses less energy/energy-saving shutdown feature**
- ❑4 **Good for the environment**
- ❑5 **Certified as energy efficient /standard of efficiency**
- ❑6 **Confused with Energy Guide label**
- ❑7 **[VOL] Other [SPECIFY]**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 111 IS NOT 7, THEN SKIP TO QUESTION 113]

Q.112 What OTHER messages come to mind when you see the Energy Star label? **[RECORD RESPONSE VERBATIM; PROBE WITH "ANYTHING ELSE?"]**

_____ (1424-1773)

_____

_____

_____

_____

Q.113 My next questions concern the ACT 250 process.

(1774)
❑ 1 **Continue**

Q.114 Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?

(1775)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 114 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 119]

Q.115 How many projects? **[RECORD 998 IF "DON'T KNOW" AND 999 IF "REFUSED"]**

Record # of projects: .._____ (1776-1778)

Q.116 In your opinion, do you believe that ACT 250 results in a higher, the same, or a lower level of energy efficiency being incorporated into projects than without ACT 250?

(1779)
❑ 1 **Higher**
❑ 2 **The same**
❑ 3 **Lower**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.117 In your experience would you say that you develop projects differently for ACT 250 than for non-ACT 250 projects?

(1780)
❑ 1 **Yes**
❑ 8 **[VOL] Don't know**

❑ 2 **No**

❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 117 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 119]

Q.118 What would you say is significantly different between the way you develop ACT 260 and non-ACT 250 projects? **[PROBE FOR DETAILS; RECORD RESPONSE VERBATIM]**

_____ (1781-2280)

_____

_____

_____

_____

_____

_____

Q.119 These are my last questions.

Have you heard of an organization that promotes energy efficiency statewide in Vermont?

(2281)

❑ 1 **Yes**

❑ 2 **No**

❑ 8 **[VOL] Don't know**

❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 119 IS NOT 1, THEN SKIP TO QUESTION 121]

Q.120 What is the name of the organization? **[DO NOT READ]**

(2282)

❑ 1 **Efficiency Vermont**

❑ 2 **Vermont Efficiency**

❑ 3 **EVT**

❑ 4 **The Efficiency Utility**

❑ 5 **Other**

❑ 8 **[VOL] Don't know**

❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 120 IS 1 OR 2 OR 3 OR 4, THEN SKIP TO QUESTION 122]

Q.121 Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?

(2283)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 140]

Q.122 Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?

(2284)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 122 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 125]

Q.123 Which one? Efficiency Vermont, Burlington Electric Department, or both?

(2285)
- ❑1 **Efficiency Vermont**
- ❑2 **Burlington Electric Department**
- ❑3 **Both**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.124 Did you contact them, did they contact you, or both?

(2286)
- ❑1 **I contacted them**
- ❑2 **They contacted me**
- ❑3 **Both**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.125 Have you conducted any projects with or received services from Efficiency Vermont or Burlington Electric Department? **[IF UNSURE, PROMPT WITH "THIS INCLUDES TECHNICAL ASSISTANCE, REBATES, AND CONFERENCES"]**

(2287)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 139]

Q.126 Who recommended you use EVT or BED? **[DO NOT READ; SELECT ALL THAT APPLY]**

(2288-2294)

- ❑ 1 **Architect**
- ❑ 2 **Consulting Engineer**
- ❑ 3 **General Contractor**
- ❑ 4 **Other Contractor**
- ❑ 5 **Someone on your staff**
- ❑ 6 **Colleague at another company**
- ❑ 7 **Other**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.127 Which of the following services have you used?

A) Attended the Building Solutions conference in February?

(2295)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.128

B) Technical assistance for ACT 250 new construction or renovation projects?

(2296)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.129

C) Technical assistance for NON ACT 250 new construction or renovation project?

(2297)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.130

D) Technical assistance for remodeling or equipment replacement projects?

(2298)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.131

E) Rebates for lighting?

(2299)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.132

F) Rebates for HVAC?

(2300)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.133 G) Rebates for motors?

(2301)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.134 On a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied, how satisfied were you with...

A) Efficiency Vermont's knowledge of energy efficiency solutions?

(2302)
❑ 1 **1 - Not at all satisfied**
❑ 2 **2**
❑ 3 **3**
❑ 4 **4**
❑ 5 **5 - Very satisfied**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.135 How satisfied were you with:

B) Efficiency Vermont's responsiveness to your project needs?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(2303)
❑ 1 **1 - Not at all satisfied**
❑ 2 **2**
❑ 3 **3**
❑ 4 **4**
❑ 5 **5 - Very satisfied**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.136 How satisfied were you with:

C) The usefulness of information provided by Efficiency Vermont?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(2304)

- ❑ 1 **1 - Not at all satisfied**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very satisfied**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.137 How satisfied were you with:

D) The quality of services provided by Efficiency Vermont?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(2305)

- ❑ 1 **1 - Not at all satisfied**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very satisfied**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.138 What was your experience with Efficiency Vermont? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (2306-2805)

_____

_____

_____

_____

_____

_____

Q.139 Would you say you are very likely, somewhat likely, or not at all likely to use Efficiency Vermont or BED assistance on a project in the future?

(2806)
- ❑ 1 **Very likely**
- ❑ 2 **Somewhat likely**
- ❑ 3 **Not at all likely**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.140 Why do you say that? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (2807-3306)

_____

_____

_____

_____

_____

_____

Q.141 We want to thank you for your time and participation in this research. Have a great day/evening!

(3307)
- ❑ 1 **Continue**

Q.142 THE INTERVIEW IS NOW COMPLETE. PLEASE TAKE TIME TO ENTER THE FOLLOWING INFORMATION.

-PHONE NUMBER (FROM SAMPLE)
-NAME OF FIRM (FROM SAMPLE)
-VT GEOGRAPHY CODE (FROM SAMPLE)
-NAME OF SAMPLE USED (TOP OF SAMPLE)

-DATE OF INTERVIEW
-INTERVIEWER INITIALS

(3308)
- ❑ 1 **Continue**

Q.143 PHONE NUMBER (FROM SAMPLE)

[EXAMPLE: 8025551234]

_____ (3309-3318)

Q.144 NAME OF FIRM (FROM SAMPLE)

[EXAMPLE: JONES REALTORS]

_____ (3319-3418)

_____

Q.145 VERMONT GEOGRAPHY CODE (FROM SAMPLE)

(3419)
❑ 1 **1 (Chittenden)**
❑ 2 **2 (Small Urban)**
❑ 3 **3 (Rural)**

Q.146 SAMPLE USED (NAME AT TOP OF SAMPLE)

(3420)
❑ 1 **Real Estate Managers**
❑ 2 **Real Estate Developers**

Q.147 DATE OF INTERVIEW:

[EXAMPLE: 040602]

Enter Date: .._____ (3421-3426)

Q.148 INTERVIEWER INITIALS:

_____ (3427-3476)

EXISTING CONSTRUCTION END USER SURVEY - GDS

Questionnaire # _____ (1-4)

Q.1 My name is _____ with Action Research. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with the owner or president -- or a representative for the owner or president--about the construction and equipment in the building that **[NAME OF FIRM FROM LIST]** occupies. This is not a sales call. May I please speak with the owner of **[NAME OF FIRM FROM LIST]**?

[IF REFUSED:] Perhaps there is someone who works closely with the owner that I might talk with, someone who is knowledgeable about the building and equipment. May I speak with that person? **[IF NEW CONTACT RECORD NAME AND NUMBER ON SAMPLE]**

(5)
❑1 **Yes**
❑2 **No [IF REFERRED TO SOMEONE ELS E; RECORD NEW INFO. ON SAMPLE]**

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 1]

Q.2 **[IF NEW CONTACT IS REACHED:]**
I am conducting research for the Vermont Department of Public Service. I am talking with businesses and agencies about the construction of the buildings they occupy and the major equipment in the buildings. This is not a sales call.

[ALL]
As a key energy user in the Vermont commercial/industrial market, I would like to ask you some questions. My questions will take about 20 minutes. Your responses will remain confidential.

(6)
❑1 **Continue**

Q.3 A) Is your establishment in a commercial, industrial, or institutional building? **[MEANING NOT IN A HOME]**

(7)
❑1 **Yes, it's in a commercial, industrial, institutional bldg**
❑2 **No, it's a home [THANK AND TERMINATE]**

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 3]

Q.4 B) I am going to read a list of types of buildings. Please tell me which type of building best describes the building your establishment occupies? Is it an **[READ LIST]**

(8)
- ❑ 1 **Office**
- ❑ 2 **Retail**
- ❑ 3 **Industrial**
- ❑ 4 **School (non-college)**
- ❑ 5 **Warehouse**
- ❑ 6 **Public buildings, health care, college, church or other inst.**
- ❑ 7 **Multi-family building four stories or taller**
- ❑ 8 **Multi-family building 1,2, or 3 stories**
- ❑ 9 **[VOL] Other**

[IF THE ANSWER IS 8, THEN SKIP TO QUESTION 4]

Q.5 C) I want to clarify the relationship between your establishment and the building you occupy. Does **[FIRM NAME FROM LIST]** own and occupy the property at **[SITE ADDRESS FROM LIST]**, or does it own the property and lease it to a tenant that occupies it, or does **[FIRM NAME]** occupy this property that it has leased from the owner?

(9)
- ❑ 1 **Own and occupy**
- ❑ 2 **Own and lease to a tenant**
- ❑ 3 **Occupies space leased from the owner**
- ❑ 4 **Manages the space for the owner and tenant**
- ❑ 5 **No one in firm knows [PROBE FOR PERSON WHO KNOWS]**

[IF THE ANSWER IS 5, THEN SKIP TO QUESTION 5]

Q.6 Da) In the past two years, has your establishment been in the market for lighting systems? By that, I mean have you purchased, contracted for, or shopped for lighting systems.

(10)
❑ 1 **Yes** ❑ 2 **No**

Q.7 Db) In the past two years, has your establishment purchased, shopped for, or contracted for **controls** for your lighting systems?

(11)
❑ 1 **Yes** ❑ 2 **No**

Q.8 E) In the past two years, has your establishment shopped for or talked to a designer or contractor about any of the following equipment or construction activities.

(12)
❑ 1 **Continue**

Q.9 1) Changes to windows?

(13)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.10 How about...

2) Changes to roof, or insulation levels?

(14)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.11 Did your establishment shop for or talk to a designer or contractor about...

3) Changes to the building structure?

(15)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.12 How about...

4) Changes to heating or cooling equipment?

(16)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.13 Did your establishment shop for or talk to a designer or contractor about...

5) Changes to ventilation systems?

(17)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.14 Did your establishment shop for or talk to a designer or contractor about...

6) Changes to refrigeration systems?

(18)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.15 How about...

7) Changes to air compressors?

(19)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.16 Did your establishment shop for or talk to a designer or contractor about...

8) Changes in motors or variable speed drives?

(20)
❑ 1 **Yes - shopped for or talked to designer or contractor**
❑ 2 **No - did not**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.17 Did your establishment shop for or talk to a designer or contractor about...

9) Changes to any other major electrical equipment such as pumps, industrial equipment, or snow-making equipment?

(21)
❑1 **Yes - shopped for or talked to designer or contractor**
❑2 **No - did not**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.18 The questions in this survey concern the equipment in and the construction of the space that **[NAME OF FIRM]** occupies.

(22)
❑1 **Continue**

[IF THE ANSWER TO QUESTION 5 IS 2 OR 4, THEN SKIP TO QUESTION 21]

Q.19 In about what year did your business occupy the building it is in now?
[IF DON'T KNOW, RECORD 9999]

[IF CALLING A SCHOOL, RECORD 8888]

[EXAMPLE: 2002]

Record year occupied building: .. _____ (23-26)

[IF THE ANSWER TO QUESTION 19 IS NOT 9999, THEN SKIP TO QUESTION 21]

Q.20 Would you say it's been about: **[READ LIST]**

(27)
- ❑ 1 **Less than 5 years**
- ❑ 2 **Between 5 and 10 years**
- ❑ 3 **Between 11 and 20 years**
- ❑ 4 **More than 20 years**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.21 How old would you guess the building is? **[PROBE TO FIT]**

(28)
- ❑ 1 **Less than 5 years old**
- ❑ 2 **Between 5 and 20 years old**
- ❑ 3 **Older than 20 years**
- ❑ 6 **N/A [FOR SCHOOLS ONLY]**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 5 IS 2 OR 4, THEN SKIP TO QUESTION 23]

Q.22 And, what would you guess is the total square footage your establishment occupies?

[BEST GUESS IS OK; READ IF HELPFUL]

(29)
- ❑ 1 **Under 5,000 square feet**
- ❑ 2 **5,000 to just under 10,000 square feet**
- ❑ 3 **10,000 to just under 25,000 square feet**
- ❑ 4 **25,000 to just under 75,000 square feet**
- ❑ 5 **75,000 square feet or more**
- ❑ 6 **N/A [FOR SCHOOLS ONLY]**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.23 Please tell me whether or not you are planning to make, or are in the process of making any of the following changes to the building at your location in the next two years:

A) Remodeling the current space?

(30)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.24 How about:

B) Constructing a new building?

(31)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.25 How about:

C) Constructing a new addition?

[IF NECESSARY REMIND YOU ARE ASKING IF THEY ARE PLANNING TO OR ARE IN THE PROCESS OF MAKING THIS CHANGE IN THE NEXT TWO YEARS]

(32)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 5 IS 1, THEN SKIP TO QUESTION 29]

Q.26 Who pays the utility bills for electricity and natural gas for the building, the owner or the tenants? **[DO NOT READ LIST]**

(33)
- ❑ 1 **Owner does**
- ❑ 2 **Tenant does**
- ❑ 3 **[VOL] Owner pays for common areas, tenant pays for unit**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 5 IS 3, THEN SKIP TO QUESTION 28]

Q.27 Using a scale of 1 to 10, where 1 is not at all important and 10 is very important, how important is energy efficiency to your tenants?

(34-35)
- ❑ 01 **1 - not at all important**
- ❑ 02 **2**
- ❑ 03 **3**
- ❑ 04 **4**
- ❑ 05 **5**
- ❑ 06 **6**
- ❑ 07 **7**
- ❑ 08 **8**
- ❑ 09 **9**
- ❑ 10 **10- very important**
- ❑ 98 **[VOL] Don't know**
- ❑ 99 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 5 IS 2 OR 4, THEN SKIP TO QUESTION 29]

Q.28 Using a scale of 1 to 10, where 1 is not at all important and 10 is very important, as a tenant of a building how important is energy efficiency to you?

(36-37)

- ❑ 01 **1 - not at all important**
- ❑ 02 **2**
- ❑ 03 **3**
- ❑ 04 **4**
- ❑ 05 **5**
- ❑ 06 **6**
- ❑ 07 **7**
- ❑ 08 **8**
- ❑ 09 **9**
- ❑ 10 **10- very important**
- ❑ 98 **[VOL] Don't know**
- ❑ 99 **[VOL] Refused**

Q.29 Now I am going to read a list of equipment that could be installed in a building. When I read the name, please indicate if you have ever heard of this equipment before.

[FOR ALL QUESTIONS IN SERIES; IF RESPONDENT IS UNSURE OR UNDECIDED CODE AS "NO" RESPONSE]

(38)

- ❑ 1 **Continue**

[ASK QUESTIONS 30 TO 42 IN RANDOM ORDER]

Q.30 A) Low-e glass for windows?

(39)

- ❑ 1 **Yes**
- ❑ 2 **No**

Q.31 B) T-8 lights?

(40)

- ❑ 1 **Yes**
- ❑ 2 **No**

Q.32 C) Ever heard of electronic ballasts for lights?

(41)

- ❑ 1 **Yes**
- ❑ 2 **No**

Q.33 D) How about occupancy sensors to control lights?

(42)

- ❑ 1 **Yes**
- ❑ 2 **No**

Q.34 E) Compact fluorescent lights?

(43)
❑ 1 **Yes** ❑ 2 **No**

Q.35 F) Ever heard of L.E.D exit signs?

(44)
❑ 1 **Yes** ❑ 2 **No**

Q.36 G) Design features other than windows and skylights to bring daylight into the building?

(45)
❑ 1 **Yes** ❑ 2 **No**

Q.37 H) How about multi-level switching controls for lighting?

(46)
❑ 1 **Yes** ❑ 2 **No**

Q.38 I) Ever heard of an economizer for heating and cooling systems?

(47)
❑ 1 **Yes** ❑ 2 **No**

Q.39 J) Ever heard of a condensing furnace or boiler?

(48)
❑ 1 **Yes** ❑ 2 **No**

Q.40 K) How about a programmable thermostat?

(49)
❑ 1 **Yes** ❑ 2 **No**

Q.41 L) Ever heard of an energy management control system for heating and cooling (a.k.a EMS)?

(50)
❑ 1 **Yes** ❑ 2 **No**

Q.42 M) How about distributed generation?

(51)
❑ 1 **Yes**
❑ 2 **No**

Q.43 I am interested in learning about some of the equipment that you may have purchased and installed for this location in the past two years. Have you installed:

a) New windows or made changes to your windows?

(52)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.44 How about:

b) Installed new heating equipment or made changes to your heating system?

[IF NECESSARY REMIND THEM YOU ARE ASKING IF THIS HAS BEEN DONE IN THE PAST TWO YEARS]

(53)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.45 In the past two years have you installed:

c) New lighting equipment or made changes to your lighting system?

(54)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.46 **[CAUTION: BEGINNING REPETITIVE SERIES; OK TO SHORTEN QUESTIONS WHEN IT IS CLEAR RESPONDENT UNDERSTANDS]**

(55)
❑ 1 **Continue**

[IF THE ANSWER TO QUESTION 43 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 49]

Q.47 Did you install low-e glass windows?

(56)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 47 IS 1, THEN SKIP TO QUESTION 49]

Q.48 Did you discuss using them with your supplier, contractor or project designer?

(57)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 44 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 57]

Q.49 Did you install an economizer for heating and cooling systems?

(58)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 49 IS 1, THEN SKIP TO QUESTION 51]

Q.50 Did you discuss using an economizer with your supplier, contractor or project designer?

(59)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.51 Did you install a condensing furnace or boiler?

(60)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 51 IS 1, THEN SKIP TO QUESTION 53]

Q.52 Did you discuss using them with your supplier, contractor or project designer?

(61)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.53 How about programmable thermostats?

[IF NECESSARY, ADD: "DID YOU INSTALL PROGRAMMABLE THERMOSTATS"?]

(62)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 53 IS 1, THEN SKIP TO QUESTION 55]

Q.54 Did you discuss using them with your supplier, contractor, or project designer?

(63)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

Q.55 Did you install an energy management control system for heating and cooling? They are also called EMS.

(64)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 55 IS 1, THEN SKIP TO QUESTION 57]

Q.56 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY, ADD: "DID YOU DISCUSS USING AN ENERGY MANAGEMENT CONTROL SYSTEM FOR HEATING AND COOLING WITH THE DESIGNER OR CONTRACTOR?"]

(65)
❑1 **Yes**
❑2 **No**
❑8 **[VOL] Don't know**
❑9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 45 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 70]

Q.57 The next question concerns your lighting.

(66)
❑1 **Continue**

Q.58 Did you install T-8 lights?

(67)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 58 IS 1, THEN SKIP TO QUESTION 60]

Q.59 Did you discuss using T-8 lights with your supplier, contractor, or project designer?

(68)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.60 How about electronic ballasts? Did you install them?

(69)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 60 IS 1, THEN SKIP TO QUESTION 62]

Q.61 Did you discuss using them with with your supplier, contractor, or project designer?

[IF NECESSARY, REMIND RESPONDENT YOU ARE ASKING ABOUT ELECTRONIC BALLASTS]

(70)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.62 What about occupancy sensors?

[IF NECESSARY, ADD: "DID YOU INSTALL OCCUPANCY SENSORS?"]

(71)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 62 IS 1, THEN SKIP TO QUESTION 64]

Q.63 Did you discuss using them with your supplier, contractor or project designer?

[IF NECESSARY, REMIND RESPONDENT YOU ARE ASKING ABOUT OCCUPANCY SENSORS]

(72)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.64 Did you install compact fluorescent lights? They are also called CFLs?

(73)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 64 IS 1, THEN SKIP TO QUESTION 66]

Q.65 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT COMPACT FLUORESCENT LIGHTS OR CFLS]

(74)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.66 Did you install L.E.D exit signs?

(75)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 66 IS 1, THEN SKIP TO QUESTION 68]

Q.67 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT LED EXIT SIGNS]

(76)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.68 Did you install multi-level switching controls for lighting?

(77)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 68 IS 1, THEN SKIP TO QUESTION 70]

Q.69 Did you discuss using them with your supplier, contractor, or project designer?

[IF NECESSARY REMIND RESPONDENT YOU ARE ASKING ABOUT MULTI-LEVEL SWITCHING CONTROLS FOR LIGHTING]

(78)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 16 IS NOT 1, THEN SKIP TO QUESTION 72]

Q.70 The next question concerns your motors and drives.

Did you install variable frequency drives in the past two years? They are also called VFDs.

(79)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 70 IS 1, THEN SKIP TO QUESTION 72]

Q.71 Did you discuss using them with your supplier, the project designer or contractor?

(80)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.72 The next questions concern your attitudes about energy.

(81)
❑ 1 **Continue**

Q.73 I am going to read you several characteristics of lighting technologies that may be important to you. Using a scale of 1 to 5, where 1 is not at all important and 5 is very important. Please tell me how important each factor is.

(82)
❑ 1 **Continue**

[ASK QUESTIONS 74 TO 82 IN RANDOM ORDER]

Q.74 How important is

A) Initial cost?

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(83)
❑ 1 **1 - Not at all important**
❑ 2 **2**
❑ 3 **3**
❑ 4 **4**
❑ 5 **5 - Very important**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.75 How important is

B) Energy savings potential?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(84)
❑ 1 **1 - Not at all important**
❑ 2 **2**
❑ 3 **3**
❑ 4 **4**
❑ 5 **5 - Very important**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.76 How important is

C) Availability?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(85)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.77 How about

D) Quality?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(86)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.78 How important is

E) Style?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(87)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.79 How important is

F) Compatibility with existing fixtures?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(88)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.80 How about

G) Pattern of light distribution?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(89)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.81 How important is

H) Operating costs?

[IF NECESSARY REMIND: FOR LIGHTING TECHNOLOGIES]

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(90)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.82 How important is

I) Maintenance effort or cost?

[IF NECESSARY, REMIND RESPONDENT "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT]

(91)

- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.83 When you think of energy efficient lighting what are the characteristics that come to mind? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (92-591)

_____

_____

_____

_____

_____

_____

Q.84 Now I'm going to read you several factors of **heating and cooling equipment** you may think are important. Using a scale of 1 to 5, where 1 is not at all important and 5 is very important, please rate each of the following features of heating and cooling equipment.

(592)

- ❑ 1 **Continue**

[ASK QUESTIONS 85 TO 91 IN RANDOM ORDER]

Q.85 How important is...

A) Energy savings?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(593)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.86 How important is...

B) Initial cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(594)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.87 How about...

C) Availability?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(595)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.88 How important is...

D) Durability?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(596)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.89 How important is...

E) Life cycle cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(597)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.90 How important is...

F) Comfort?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(598)
- ❑1 **1 - Not at all important**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very important**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.91 How important is...

G) Maintenance effort or cost?

[IF NECESSARY REMIND: FOR HEATING AND COOLING EQUIPMENT]

[IF NECESSARY, REMIND RESPONDENT: "PLEASE USE A SCALE OF 1 TO 5, WHERE 1 IS NOT AT ALL IMPORTANT AND 5 IS VERY IMPORTANT"]

(599)
- ❑ 1 **1 - Not at all important**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very important**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.92 When you think of energy efficient heating and cooling equipment what are the characteristics that come to mind? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (600-1099)

_____

_____

_____

_____

_____

Q.93 In the past year, have you been less concerned, more concerned or had about the same level of concern for energy use compared with previous years?

(1100)
- ❑ 1 **Less concerned**
- ❑ 2 **More concerned**
- ❑ 3 **The same level of concern**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.94 Have you seen or heard of any labels or logos about energy on business equipment or building materials?

(1101)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 94 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 96]

Q.95 What labels or logos have you heard of? **[DO NOT READ; SELECT ALL THAT APPLY; PROBE WITH "ANYTHING ELSE?"]**

(1102-1104)
- ❑ 1 **Energy Star**
- ❑ 2 **Energy Guide**
- ❑ 3 **Other**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 95 IS 1, THEN SKIP TO QUESTION 98]

Q.96 Have you ever heard or seen the Energy Star label?

(1105)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER IS 1, THEN SKIP TO QUESTION 98]

Q.97 The Energy Star label is on some new electronic equipment and other building equipment and products. It is a semicircle with the word "ENERGY" and a star on it. Often the background is a blue and green globe. Now, do you recall having seen or heard of the Energy Star label?

(1106)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 100]

Q.98 What messages come to mind when you see the Energy Star label? **[DO NOT READ; SELECT ALL THAT APPLY]**

(1107-1113)
- ❑ 1 **Conserves energy/energy efficient**
- ❑ 2 **Savings on energy bill**
- ❑ 3 **Uses less energy/energy-saving shutdown feature**
- ❑ 4 **Good for the environment**
- ❑ 5 **Certified as energy efficient /standard of efficiency**
- ❑ 6 **Confused with Energy Guide label**
- ❑ 7 **[VOL] Other [SPECIFY]**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 98 IS NOT 7, THEN SKIP TO QUESTION 100]

Q.99 What OTHER messages come to mind when you see the Energy Star label? **[RECORD RESPONSE VERBATIM; PROBE WITH "ANYTHING ELSE?"]**

_____ (1114-1463)

_____

_____

_____

_____

Q.100 My next questions concern the ACT 250 process.

(1464)
❑ 1 **Continue**

Q.101 Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?

(1465)
❑ 1 **Yes**
❑ 2 **No**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 101 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 104]

Q.102 How many projects? **[RECORD 998 IF "DON'T KNOW" AND 999 IF "REFUSED"]**

Record # of projects: .._____ (1466-1468)

Q.103 In your opinion, do you believe that ACT 250 results in a higher, the same, or a lower level of energy efficiency being incorporated into projects than without ACT 250?

(1469)
❑ 1 **Higher**
❑ 2 **The same**
❑ 3 **Lower**
❑ 8 **[VOL] Don't know**
❑ 9 **[VOL] Refused**

Q.104 These are my last questions.

Have you heard of an organization that promotes energy efficiency statewide in Vermont?

(1470)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 104 IS NOT 1, THEN SKIP TO QUESTION 106]

Q.105 What is the name of the organization? **[DO NOT READ]**

(1471)
- ❑ 1 **Efficiency Vermont**
- ❑ 2 **Vermont Efficiency**
- ❑ 3 **EVT**
- ❑ 4 **The Efficiency Utility**
- ❑ 5 **Other**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 105 IS 1 OR 2 OR 3 OR 4, THEN SKIP TO QUESTION 107]

Q.106 Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?

(1472)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 126]

Q.107 Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?

(1473)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER TO QUESTION 107 IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 110]

Q.108 Which one? Efficiency Vermont, Burlington Electric Department, or both?

(1474)
- ❑ 1 **Efficiency Vermont**
- ❑ 2 **Burlington Electric Department**
- ❑ 3 **Both**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.109 Did you contact them, did they contact you, or both?

(1475)
- ❑ 1 **I contacted them**
- ❑ 2 **They contacted me**
- ❑ 3 **Both**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.110 Have you conducted any projects with or received services from Efficiency Vermont or Burlington Electric Department? **[IF UNSURE, PROMPT WITH "THIS INCLUDES TECHNICAL ASSISTANCE, REBATES, AND CONFERENCES"]**

(1476)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

[IF THE ANSWER IS 2 OR 8 OR 9, THEN SKIP TO QUESTION 124]

Q.111 Who recommended you use EVT or BED? **[DO NOT READ; SELECT ALL THAT APPLY]**

(1477-1483)
- ❑ 1 **Architect**
- ❑ 2 **Consulting Engineer**
- ❑ 3 **General Contractor**
- ❑ 4 **Other Contractor**
- ❑ 5 **Someone on your staff**
- ❑ 6 **Colleague at another company**
- ❑ 7 **Other**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.112 Which of the following services have you used?

A) Attended the Building Solutions conference in February?

(1484)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.113

B) Technical assistance for ACT 250 new construction or renovation projects?

(1485)
- ❑ 1 **Yes**
- ❑ 2 **No**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.114

C) Technical assistance for NON ACT 250 new construction or renovation project?

(1486)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.115

D) Technical assistance for remodeling or equipment replacement projects?

(1487)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.116

E) Rebates for lighting?

(1488)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.117

F) Rebates for HVAC?

(1489)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.118

G) Rebates for motors?

(1490)
- ❑1 **Yes**
- ❑2 **No**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.119 On a scale of 1 to 5, <u>where 1 is not at all satisfied and 5 is very satisfied, how satisfied were you with...</u>

A) Efficiency Vermont's knowledge of energy efficiency solutions?

(1491)
- ❑1 **1 - Not at all satisfied**
- ❑2 **2**
- ❑3 **3**
- ❑4 **4**
- ❑5 **5 - Very satisfied**
- ❑8 **[VOL] Don't know**
- ❑9 **[VOL] Refused**

Q.120 How satisfied were you with:

B) Efficiency Vermont's responsiveness to your project needs?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(1492)

- ❑ 1 **1 - Not at all satisfied**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very satisfied**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.121 How satisfied were you with:

C) The usefulness of information provided by Efficiency Vermont?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(1493)

- ❑ 1 **1 - Not at all satisfied**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very satisfied**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.122 How satisfied were you with:

D) The quality of services provided by Efficiency Vermont?

[IF NECESSARY, REMIND SCALE: "1 IS NOT AT ALL SATISFIED AND 5 IS VERY SATISFIED"]

(1494)

- ❑ 1 **1 - Not at all satisfied**
- ❑ 2 **2**
- ❑ 3 **3**
- ❑ 4 **4**
- ❑ 5 **5 - Very satisfied**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.123 What was your experience with Efficiency Vermont? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (1495-1994)

_____

_____

_____

_____

_____

_____

Q.124 Would you say you are very likely, somewhat likely, or not at all likely to use Efficiency Vermont or BED assistance on a project in the future?

(1995)

- ❑ 1 **Very likely**
- ❑ 2 **Somewhat likely**
- ❑ 3 **Not at all likely**
- ❑ 8 **[VOL] Don't know**
- ❑ 9 **[VOL] Refused**

Q.125 Why do you say that? **[RECORD RESPONSE VERBATIM; PROBE FOR DETAILS]**

_____ (1996-2495)

_____

_____

_____

_____

_____

_____

Q.126 Before we close, we are asking a select set of building owners if they would be willing to participate in an on-site survey of their building. This on-site survey will take about four hours and will involve one of our engineers visiting your building, walking around and in the building and doing a brief inventory of the type of equipment in the building, no one needs to accompany them during this visit.

For those owners who are willing to participate and are subsequently selected for the on-site visit, we will be offering a thank you gift of $50 made out to you or a charity of your choice. Would you be willing to participate?

(2496)
❑ 1 **Yes** ❑ 2 **No**

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 128]

Q.127 Thank you for your willingness to participate. Someone from SAIC will be calling in the next three weeks if your firm is selected for an on-site visit.

Who should we contact about providing us access to your facility? **[RECORD FIRST AND LAST NAME OF CONTACT AND PHONE NUMBER WITH AREA CODE]**

_____ (2497-2596)

_____

Q.128 We want to thank you for your time and participation in this research. Have a great day/evening!

(2597)
❑ 1 **Continue**

Q.129 THE INTERVIEW IS NOW COMPLETE. PLEASE TAKE TIME TO ENTER THE FOLLOWING INFORMATION.

-PHONE NUMBER (FROM SAMPLE)
-NAME OF FIRM (FROM SAMPLE)
-VT GEOGRAPHY CODE (FROM SAMPLE)
-NAME OF SAMPLE USED (TOP OF SAMPLE)

-DATE OF INTERVIEW
-INTERVIEWER INITIALS

(2598)
❑ 1 **Continue**

Q.130 PHONE NUMBER (FROM SAMPLE)

[EXAMPLE: 8025551234]

_____ (2599-2608)

Q.131 NAME OF FIRM (FROM SAMPLE)

[EXAMPLE: JONES REALTORS]

_____ (2609-2708)

_____

Q.132 VERMONT GEOGRAPHY CODE (FROM SAMPLE)

(2709)
❑ 1 **1 (Chittenden)**
❑ 2 **2 (Small Urban)**
❑ 3 **3 (Rural)**

Q.133 SAMPLE USED (NAME AT TOP OF SAMPLE)

(2710)
❑ 1 **Shopping center**
❑ 2 **Office Buildings**
❑ 3 **School Districts**
❑ 4 **Real Estate Management**
❑ 5 **Existing Vermont Businesses**

Q.134 DATE OF INTERVIEW:

[EXAMPLE: 040602]

Enter Date: .._____ (2711-2716)

Q.135 INTERVIEWER INITIALS:

_____ (2717-2766)

VT C/I LIGHTING SUPPLIER INTERVIEW GUIDE
1/23/02

Name: _____ Title _____
Firm: _____
Phone number: _____ Date of interview: _____
Length of Interview _____ Conducted by (initials) _____

Hello, my name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with suppliers of lighting equipment in Vermont This is not a sales call. As a key person in this market, I would like to ask you some questions. My questions will take about 20 minutes; your responses will remain confidential.

Is this a good time for you to talk, or can we arrange a more convenient time?
Set appointment: _____

If unwilling to talk, see if they can identify another informant.

Thanks for agreeing to discuss lighting equipment with me today.
My questions will help us understand how buildings are built in Vermont and how lighting equipment is included in these buildings.

Screening Questions

A. First let me confirm that your company does sell lighting equipment for installation in Vermont.
   1. Yes
   2. No **(Thank and terminate)**

B. If yes, in the past 12 months, approximately what percent of **your** firms lighting equipment sales was sold for installation in Vermont?
   ____% (**If under 10%, thank and terminate**)
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

C. I will read four categories, please tell me what proportion of your sales are for:
   a. Commercial facilities (such as offices, retail space, restaurants)? %: _____
   b. How about government, health care, or educational facilities?
   c. Industrial or warehouse facilities? % _____
   d. How about residential? (such as houses, apartments, assisted living) %___
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**
   Total = 100%
   {If d=100% (exclusively residential), thank and terminate}

D. For the following five categories, about what percentage of your total business revenues at this location comes ....
   a. From distribution & wholesale sales ____ % **If less than 10% thank and terminate.**
   b. How about retail sales (with no installation) ____%
   c. Retail sales and installation ____%
   d. Repair ____%
   e. Other _____%
   Total= 100%
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

All of the remaining questions in this survey will ask about your commercial and industrial lighting supply business for sales for installation in Vermont over the past twelve months.

1. I am going to read you several factors of lighting technologies that may be important to your customers. Using a scale of 1-5, where 1 is not at all important and 5 is very important. Please tell me how important each factor is?
   1= not at all important
   5= very important
   a. Initial Price ___
   b. Energy Savings Potential ___
   c. Availability ___
   d. Quality ___
   e. Brand ___
   f. Style ___
   g. Compatibility with existing Fixtures ___
   h. Customer Interest ___
   i. Pattern of light distribution ___

2. My next questions concern the sales of different lighting equipment.

	(1) **Does your company sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY)	(2) What is the % of total annual sales For this product? (Estimate)	(3) Does your company sell:	(4) What is the % of sales for this type of this class of products in 1
A	☐ Fluorescent Lighting Fixtures		☐ T5 Fixtures	A
			☐ T8 Fixtures	B
			☐ T12 Fixtures	C
			☐ Compact fluorescent fixtures	D (sum of A-D=100%)
B	☐ High and Low Bay Fixtures		☐ Metal Halide Regular	E
			☐ Metal Halide pulse start	F
			☐ Fluorescent	G (sum of E-G=100%)
C	☐ Occupancy Sensors		☐ On-off Occupancy sensors	H
			☐ High/low Occupancy sensors	I (sum of H-I=100%)
D	☐ Lighting Controls		☐ Photocells with dimming ballasts for automatic daylight dimming	J
			☐ Manual or automatic multi-level switching controls	K
			☐ Centralized automatic lighting control system	L
E	☐ End-user Training in use of controls equipment		NA	

	(1) **Does your company sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY)	(2) What is the % of total annual sales For this product? (Estimate)	(3) Does your company sell:	(4) What is the % of sales for this type of this class of products in 1
F	☐ Exit signs		☐ LED Exit Signs	M
			☐ Compact fluorescent Exit signs	N
			☐ Electroluminescent Exit signs	(sum of M+N+O=100%)
G	☐ Ballasts		☐ Magnetic Ballasts	P
			☐ Standard Electronic Ballasts	Q
			☐ Electronic Tandem Ballasts	R
			☐ Electronic Dimming ballasts	S (sum of P-S=100%)

T. Thinking about all the projects sales in the past year, approximately what percent of projects include occupancy sensors?

What percent of the projects included photocells for use with dimming ballasts?

3. What are your firms total annual sales revenue for lighting equipment?

_____

4. Do you ever actively promote or recommend high efficiency Lighting technologies?
   1. Yes
   2. No

=➔ if yes a.

a. What percent of the time do you recommend or promote high efficiency lighting technologies? _____%

b. Does this vary by type of project?

1. Yes
2. No (skip to d)

c. If yes, How does it vary?

d. Using a scale of 1 to 5, where one is never and 5 is all the time, how often do you emphasize each of the following when promoting high efficiency lighting? *(check all that apply – Do not read list)*

a. Lower life cycle cost
b. Environmental benefits
c. Incentives available
d. Energy cost savings

5. I am going to read a list of features that you may emphasize when selling high efficiency lighting technologies to customers.. Using a scale of 1-5 where 1 is not a selling feature and 5 is very much a selling feature. Tell me how you rate each as a selling feature for high efficiency lighting?

1= not a selling feature
5= very much a selling feature

a. Appearance
b. Life Cycle Cost
c. Environmental benefits
d. Energy (Cost) Savings
e. Incentives / Rebates available
f. Light quality/color
g. Light quality/brightness
h. Light quality/glare
i. Light quality/noise
j. Fit with existing fixtures
k. Comfort

6. On a scale of 1 to 10 - where 1 represents having almost no knowledge and 10 is extremely knowledgeable - How familiar would you say you are with high efficiency lighting technologies?

Almost No knowledge									Extremely Knowledgeable
1	2	3	4	5	6	7	8	9	10

7. On a scale of 1 to 10 where 1 indicates no interest at all, and 10 indicates extremely high interest – how would you rate your customers' interest in high efficiency Lighting?

No interest at all Extremely high interest

1 2 3 4 5 6 7 8 9 10

8. In the past 12 months, would you say that your customers' willingness to adopt energy efficient lighting technologies has:
   1. Decreased
   2. Increased
   3. Remained the same

These are my last set of questions. The first concerns the ACT 250 process.

9. Are you familiar with ACT 250?
   1. Yes
   2. No (skip to 10)

   ====>If yes,

   a. Compared to customers who do not have to comply with Act 250, how likely are customers that must comply with Act 250 to purchase or specify high efficiency lighting?
      1. More likely
      2. Less likely
      3. Just as likely

10. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    1. Yes
    2. No

    ====>If yes,

    a. What is the name of the organization? _____

If they mention Efficiency Vermont, Vermont Efficiency, the Efficiency Utility or EVT skip to 11.

If they mention anything else ask 10b.

b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
   1. Yes
   2. No (thank and terminate)

12. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
    1. Yes
    2. No (Skip to 17)

    ==>If Yes,

    a. Did you or your firm contact them or did they contact you?
        1. We contacted them
        2. They contacted us
        3. Both
    b. Did any of your customers ask that you contact Efficiency Vermont or Burlington Electric Department?
        Yes
        No
    c. What was the purpose of your contact with Efficiency Vermont or Burlington Electric Department?

13. Have you used any of Efficiency VT's services in the past year?
    1. Yes
    2. No (Skip to 17)

    ==>Which of these services have you used?

    a. Marketing assistance Yes No
    b. Rebates Yes No
    c. Attended conference in February Yes No
    d. Other (specify) _____ Yes No

14. On a scale of one to five where one is not at all satisfied and 5 is very satisfied, How satisfied were you with.
    a. Efficiency VT's Knowledge of energy efficiency solutions 1 2 3 4 5
    b. Efficiency VT's Responsiveness to project needs 1 2 3 4 5
    c. The Usefulness of information provided by Efficiency VT 1 2 3 4 5
    d. The Quality of services provided by Efficiency VT 1 2 3 4 5
    e. Could you please describe your experience with Efficiency VT?

    _____

    _____

15. Do you think that your experience with Efficiency VT will influence you to carry more, the same, or less high efficiency lighting equipment in future projects?
    1. More
    2. The same
    3. Less

16. Do you think that your experience with Efficiency VT will influence the way that you interact with developers and /or contractors?
    1. Yes
    2. No
        a. If yes, what types of changes do you expect?

        _____

        _____

17. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency VT or Burlington Electric Department assistance in the future?
    1. Very likely
    2. Somewhat likely
    3. Not at all likely
        a. Why do you say that?

        _____

        _____

18. Finally, I would like to know if there is anything that you would recommend that would improve Efficiency Vermont's services?

That is all the questions that I have today. Thank you for your time and help with this effort.

DRAFT 2001 WINDOW SUPPLIER INTERVIEW GUIDE
1/23/02

Name: _____ Title _____
Firm: _____
Phone number: _____ Date of interview: _____
Length of Interview _____ Conducted by (initials) _____

Introduction
Hello, my name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with suppliers of windows in Vermont This is not a sales call. As a key person in this market, I would like to ask you some questions. My questions will take about 20 minutes; your responses will remain confidential.

Is this a good time for you to talk, or can we arrange a more convenient time?
Set appointment: _____

If unwilling to talk, see if they can identify another informant.

Thanks for agreeing to discuss windows with me today.
My questions will help us understand how buildings are built in Vermont and how windows are included in these buildings.

Screening Questions

A. First let me confirm that your company does sell windows for use in buildings in Vermont.
   1. Yes
   2. No **(Thank and terminate)**

B. If yes, in the past 12 months, approximately what percent of **your** windows sales was sold to companies for installation in buildings in Vermont?
   ____% (**If under 10%, thank and terminate**)
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

C. For each of the following categories, please estimate what proportion of your window sales are for:
   a. Commercial facilities (such as offices, retail space, restaurants)? %: _____
   b. How about government, health care, or educational facilities?
   c. Industrial or warehouse facilities? % _____
   d. How about residential? (such as houses, apartments, assisted living) %___
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**
   Total = 100%
   {If d=100% (exclusively residential), thank and terminate}

For the remainder of this survey – we will be concentrating on your glazing supply business for installation in commercial and industrial buildings in Vermont.

1. Does your firm (Check all that apply)
   a. Sell windows only? Yes No
   b. Sell window and doors only? Yes No
   c. Windows and other various building supplies? Yes No
   d. Other (please specify)_____ Yes No

2. About what proportion of your business is concerned with:
   a. Distribution & wholesale sales ____ %
   b. How about retail sales (no installation) ____%
   c. Retail sales and installation ____%
   d. Repair ____%
   e. Other _____%
   Total= 100%
   998 = Unable to Estimate **(thank and terminate)**
   999 = Missing **(thank and terminate)**

3. Which of the following best describes your commercial and industrial Window, door and skylight supply business?
   1. Manufacturer's rep
   2. General supplier
   3. Other (please describe)_____

4. Do you have an exclusive relationship with a single manufacturer of Windows?
   1. Yes
   2. No
   If yes, which brand _____

5. I am going to read you several features of windows customers may think are important. Using a scale of 1-5, where 1 is not at all important to customers and 5 is very important to customers. Please rate how important each feature is?
   1= not at all important
   5= very important
   a. Price
   b. Energy Efficiency rating
   c. Availability
   d. Delivery (cost or time)
   e. Quality
   f. Appearance
   g. Life cycle cost
   h. Brand
   i. Style

6. My next questions concern the annual sales of windows doors and skylights over the past 12 months.

	(1) **Does your firm sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY))	(2) What is the % of total annual sales for (product class) (Estimate)	(3) Does your firm sell?	(4) What is the % of annual sales for all in product class
A	☐ Glazing		☐ Single pane	A
			☐ Double pane – non low-E SHGF < 0.49	B
			☐ Double pane – non low-E SHGF ≥ 0.49	C
			☐ Double pane – low-E SHGF < 0.49	D (sum of A-D=100%)
			☐ Double pane – low-E SHGF ≥ 0.49	E
			☐ Triple pane	F

	(1) **Does your firm sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY))	(2) What is the % of total annual sales for (product class) (Estimate)	(3) Does your firm sell?	(4) What is the % of annual sales for all in product class
B	☐ Custom Store fronts		☐ Single pane	G (sum of E-G=100%)
			☐ Double pane non low-E	H
			☐ Double pane low-E	I (sum of H-I=100%)
C	☐ Custom Curtain walls		☐ Single pane	J
			☐ Double pane non low-E	K
			☐ Double pane low-E	L

Interviewer Instructions: For each class of product in column 1 first ask whether they sell the product, then the % of their annual sales that are comprised of that product.

For some of the products there is a sub-question

The sub question is do they sell what is in column 3, if so what is the percent of the annual sales of that product class for the sub-type.

7. Do you ever actively promote or recommend high efficiency Windows?
   1. Yes
   2. No

   =➔ if yes a.
   - a. What percent of the time do you recommend or promote? _____%
   - b. Does this vary by type of project?
     1. Yes
     2. No (skip to d)
   - c. If yes, How does it vary?

d. Using a scale of 1 to 5, where one is never and 5 is all the time, how often do you emphasize each of the following when promoting high efficiency windows*? (check all that apply – Do not read list)*
   a. Lower life cycle cost
   b. Environmental benefits
   c. Incentives available
   d. Energy cost savings

8. I am going to read a list of features that you may emphasize when selling high efficiency windows technologies to customers.. Using a scale of 1-5 where 1 is not a selling feature and 5 is very much a selling feature. Tell me how you rate each as a selling feature for highly efficiency windows, doors and skylights*?*
   1= not a selling feature
   5= very much a selling feature
   a. Appearance
   b. Life Cycle Cost
   c. Environmental benefits
   d. Energy Savings
   e. Incentives / Rebates available
   f. Visual quality
   g. Comfort

9. In general – Do you promote high efficiency windows, doors and skylights differently than standard windows, doors and skylights?
   1. Yes
   2. No
      a. What do you do that is different?

10. On a scale of 1 to 10 - where 1 represents having almost no knowledge and 10 is extremely knowledgeable - How familiar would you say you are with high efficiency windows, doors and skylights?

Almost No knowledge									Extremely Knowledgeable
1	2	3	4	5	6	7	8	9	10

11. On a scale of 1 to 10 where 1 indicates no interest, and 10 indicates extremely high interest – what number would you give commercial customers' interest in high efficiency windows, doors and skylights?

No interest at all									Extremely high interest
1	2	3	4	5	6	7	8	9	10

12. In the past 12 months, would you say that your customers' willingness to adopt energy efficient windows, doors and skylights has:
    1. Decreased
    2. Increased
    3. Remained the same

These are my last set of questions. The first concerns the ACT 250 process.

13. Are you familiar with ACT 250?
    1. Yes
    2. No (skip to 14)

    ====>If yes,

    a. Compared to customers who do not have to comply with Act 250, how likely are customers that must comply with Act 250 to purchase or specify high efficiency windows, doors and skylights?
        1. More likely
        2. Less likely
        3. Just as likely

14. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    1. Yes
    2. No

    ====>If yes,

    a. What is the name of the organization? _____

If they mention Efficiency Vermont, Vermont Efficiency, the Efficiency Utility or EVT skip to 13.

If they mention anything else ask 14b.

b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
    1. Yes
    2. No (thank and terminate)

15. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
    1. Yes
    2. No (Skip to 20)

    ==>If Yes,

    a. Did you or your firm contact them or did they contact you?
        1. We contacted them
        2. They contacted us
        3. Both
    b. Did any of your customers ask that you contact Efficiency Vermont or Burlington Electric Department?
        1. Yes
        2. No
    c. What was the purpose of your contact with Efficiency Vermont or Burlington Electric Department?

16. Have you used any of Efficiency VT's services in the past year?
    1. Yes
    2. No (Skip to 20)

    ==>Which of these services have you used?

    a. Marketing assistance Yes No
    b. Rebates Yes No
    c. Attended conference in February Yes No
    d. Other (specify) _____ Yes No

17. On a scale of one to five where one is not at all satisfied and 5 is very satisfied, How satisfied were you with.
    a. Efficiency VT's Knowledge of energy efficiency solutions 1 2 3 4 5
    b. Efficiency VT's Responsiveness to project needs 1 2 3 4 5
    c. The Usefulness of information provided by Efficiency VT 1 2 3 4 5
    d. The Quality of services provided by Efficiency VT 1 2 3 4 5
    e. Could you please describe your experience with Efficiency VT?

    _____

    _____

18. Do you think that your experience with Efficiency VT will influence you to carry more, the same, or less high efficiency windows, doors and skylights in the future?
    1. More
    2. The same
    3. Less

19. Do you think that your experience with Efficiency VT will influence the way that you interact with developers and /or contractors?
    1. Yes
    2. No
        a. If yes, what types of changes do you expect?

        _____

        _____

20. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency VT or Burlington Electric Department assistance in the future?
    1. Very likely
    2. Somewhat likely
    3. Not at all likely
        a. Why do you say that?

        _____

        _____

21. Finally, I would like to know if there is anything that you would recommend that would improve Efficiency Vermont's services?

That is all the questions that I have today. Thank you for your time and help with this effort.

VT C/I HVAC SUPPLIER INTERVIEW GUIDE
1/23/02

Name: _____ Title _____
Firm: _____
Phone number: _____ Date of interview: _____
Length of Interview _____ Conducted by (initials) _____

Introduction
Hello, my name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with suppliers of HVAC equipment in Vermont This is not a sales call. As a key person in this market, I would like to ask you some questions. My questions will take about 20 minutes; your responses will remain confidential.

Is this a good time for you to talk, or can we arrange a more convenient time?
Set appointment: _____

If unwilling to talk, see if they can identify another informant.

Thanks for agreeing to discuss HVAC equipment with me today.
My questions will help us understand how buildings are built in Vermont and how HVAC equipment is included in these buildings.

Screening Questions

A. First let me confirm that your company does sell HVAC equipment for installation in Vermont.
   1. Yes
   2. No **(Thank and terminate)**

B. If yes, in the past 12 months, approximately what percent of **your** HVAC equipment sales was sold for installation in Vermont? ____%
   (**If under 10%, thank and terminate**)
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

C. For each of the following categories, please estimate what proportion of your HVAC sales are for:
   a. Commercial facilities (such as offices, retail space, restaurants)? %: _____
   b. How about government, health care, or educational facilities? %: _____
   c. Industrial or warehouse facilities? % _____
   d. How about residential? (such as houses, apartments, assisted living) %___
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**
   Total = 100%
   {If d=100% (exclusively residential), thank and terminate}

D: Does your firm (Check all that apply)

a. Sell packaged HVAC units?	Y	N
b. Install packaged HVAC units?	Y	N
c. Sell components for large DX or Chiller units?	Y	N

E. Of the following type of businesses, would you say that you are a (check one)
   1. Wholesale distributor that sells mainly to contractors and installers?
   2. A retailer that sells primarily to end-users
   3. Both a retailer and a wholesaler
   4. Other

F. About what percentage of your total business revenues at this location come from distribution and wholesale sales?
   a. Revenues from distribution & wholesale sales ____ % **If less than 10% thank and terminate.**
   b. How about retail sales (no installation) ____%
   c. Retail sales and installation ____%
   d. Repair ____%
   e. Other _____%
   Total= 100%
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

For this interview, I would like to focus strictly on your distribution activities for commercial and industrial HVAC equipment that you have sold for use in Vermont over the past twelve months.

1. Which of the following best describes your commercial and industrial HVAC distribution business? (check all that apply)
   a. Manufacturer's rep Yes No
   b. General supplier or distributor Yes No
   c. Other _____

2. Do you have an exclusive relationship with a single manufacturer of HVAC equipment?
   1. Yes
   2. No

   If yes, which brand _____

3. My next questions concern the sales of particular types of equipment by your company.

	(1) **Does your company sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY)	(2) What is the % of total annual sales For this product? (Estimate)	(3) Does your company sell:	(4) What is the % of sales for this type of this class of products in 1
A	☐ Economizers		☐ Single enthalpy Economizers	
			☐ Dry bulb Economizers	
			☐ Dual enthalpy economizers	
B	☐ Packaged or split system HVAC Units		☐ Packaged or split system heat pumps or AC <65,000 btu (5.4 tons) and SEER < 13.0	A
			☐ Packaged or split system heat pumps or AC <65,000 btu (5.4 tons) and SEER > 13.0	B
			☐ Packaged or split system heat pumps or AC 65 – 135 kbtu (5.4 – 11.25 tons) and EER < 11	C
			☐ Packaged or split system heat pumps or AC 65 – 135 kbtu (5.4 – 11.25 tons) and EER > 11.0	D

	(1) **Does your company sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY)	(2) What is the % of total annual sales For this product? (Estimate)	(3) Does your company sell:	(4) What is the % of sales for this type of this class of products in 1
			☐ Packaged or split system heat pumps or AC>135 kbtu (11.25 tons) and EER < 10.8	E
			☐ Packaged or split system heat pumps or AC>135 kbtu (11.25 tons) and EER > 10.8	F (Sum of A-F=100%)
			What percent of all packaged or split systems use water source heat pumps?	G
C	☐ Natural Gas furnaces or boilers (heating)		☐ Condensing furnaces or boilers	H
			☐ Non condensing furnaces or boilers AFUE < 83%	I (sum of H+I=100%)
D	☐ Oil furnaces or boilers (heating)		☐ Condensing furnaces or boilers	J
			☐ Non condensing furnaces or boilers AFUE < 83%	K (sum of J+K=100%)
E	☐ Gas unit heaters		☐ Standard vented gas unit heaters	L
			☐ Power vented gas unit heaters	M
			☐ Radiant gas heaters	N
F	☐ Duct & piping equipment and insulation		What is the typical level of insulation used (in R value or inches)	
G	☐ Thermostats		☐ Seven-day programmable thermostat	O
H	☐ Total building energy management controls		NA	
I	☐ Total building energy management controls end-user Training		NA	

	(1) **Does your company sell:** (INTERVIEWER, CHECK BOX FOR ALL PRODUCTS BELOW THAT THE SUPPLIER SELLS (CHECK ALL THAT APPLY)	(2) What is the % of total annual sales For this product? (Estimate)	(3) Does your company sell:	(4) What is the % of sales for this type of this class of products in 1
J	☐ Chillers		☐ Water cooled	P
	(Sum of all % in column 2 should be less than or equal to 100%)			

Q. What percent of all projects for which you sell equipment include:
Variable air volume systems _____
HVAC air heat recovery _____
Heat recovery high temperature _____
Temperature reset controls for heating and/or cooling based on outside or return temperature _____

R. What is your estimate of the percent of buildings over 100 tons cooling load that are using chillers?_____

S. Thinking about all projects for which economizers would be appropriate, what percent use economizers? _____

Notes to interviewers:

For each class of product in column 1 first ask whether they sell the product, then the % of their annual sales that are comprised of that product.

For some of the products there is a sub-question (economizers, air furnaces etc) The sub question is do they sell what is in column 3, if so what is the percent of the annual sales of that product class for the sub-type.

For two sub questions (marked in yellow highlighter) the sub question is not about sales but about the product itself.

4. What is your estimate of your firm's total annual HVAC equipment sales revenue? _____

5. I am going to read you several factors of HVAC equipment customers may think are important. Using a scale of 1-5, where 1 is not at all important to customers and 5 is very important to customers. Please rate each of the following features of HVAC equipment.
   a. Energy savings
   b. Initial Cost
   c. Availability
   d. Durability
   e. Life cycle cost
   f. Comfort
   g. Maintenance

6. I am going to read you several features that you may emphasize when selling high efficiency HVAC technologies to customers. Using a scale of 1-5, where 1 is not at all a selling feature and 5 is a major selling feature. Please rate each of the following as a selling feature of high efficiency HVAC equipment.
   a. Energy savings
   b. Initial Cost
   c. Availability
   d. Durability
   e. Life cycle cost
   f. Comfort
   g. Maintenance

7. On a scale of 1 to 10 - where 1 represents having almost no knowledge and 10 is extremely knowledgeable – What is your knowledge of HVAC high efficiency equipment and options?

Almost No knowledge									extremely knowledgeable
1	2	3	4	5	6	7	8	9	10

8. Do you ever actively promote or recommend high efficiency HVAC units?
   1. Yes
   2. No

   =➔ if yes
   a. What percent of the time do you recommend or promote high efficiency HVAC units? _____%
   b. Does this vary by type of project?
      1. Yes
      2. No (skip to d)
   c. If yes, How does it vary?
   d. Using a scale of 1 to 5, where one is never and 5 is all the time, how often do you emphasize each of the following when promoting high efficiency units? *(check all that apply – Do not read list)*
      a. Lower life cycle cost
      b. Environmental benefits
      c. Incentives available
      d. Energy cost savings
      e. Some other feature (s) *(please describe)*_____

9. On a scale of 1 to 10 where 1 indicates no interest, and 10 indicates extremely high interest – How would you rate your firm's customers' interest in highly efficient HVAC equipment?

No interest at all									High interest
1	2	3	4	5	6	7	8	9	10

10. In the past 12 months, would you say that your customers' willingness to adopt energy efficient HVAC equipment has:
    1. Decreased
    2. Increased
    3. Remained the same

These are my last set of questions. The first concerns the ACT 250 process.

11. Are you familiar with ACT 250?
    1. Yes
    2. No (skip to 12)
       ====>If yes,
       a. Compared to customers who do not have to comply with Act 250, how likely are customers that must comply with Act 250 to purchase or specify high efficiency HVAC units?
          1. More likely
          2. Less likely
          3. Just as likely

12. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    1. Yes
    2. No
       ====>If yes,
       a. What is the name of the organization? _____

If they mention Efficiency Vermont, Vermont Efficiency, the Efficiency Utility or EVT skip to 12.

If they mention anything else ask 12b.

   b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
      1. Yes
      2. No (thank and terminate)

13. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
    1. Yes
    2. No (Skip to 18)
       ==>If Yes,
       a. Did you or your firm contact them or did they contact you?
          1. We contacted them
          2. They contacted us
          3. Both
       b. Did any of your customers ask that you contact Efficiency Vermont or Burlington Electric Department?
          1. Yes
          2. No
       c. What was the purpose of your contact with Efficiency Vermont or Burlington Electric Department?

14. Have you used any of Efficiency VT's services in the past year?
    1. Yes
    2. No (Skip to 18)

    ==>Which of these services have you used?

    a. Marketing assistance Yes No
    b. Rebates Yes No
    c. Attended conference in February Yes No
    d. Other (specify) _____ Yes No

15. On a scale of 1 to 5 where 1 is not at all satisfied and 5 is very satisfied, How satisfied were you with.

    a. Efficiency VT's Knowledge of energy efficiency solutions 1 2 3 4 5
    b. Efficiency VT's Responsiveness to project needs 1 2 3 4 5
    c. The Usefulness of information provided by Efficiency VT 1 2 3 4 5
    d. The Quality of services provided by Efficiency VT 1 2 3 4 5
    e. Could you please describe your experience with Efficiency VT?

    _____

    _____

16. Do you think that your experience with Efficiency VT will influence you to stock more, the same, or less high efficiency HVAC units in future projects?
    1. More
    2. The same
    3. Less

17. Do you think that your experience with Efficiency VT will influence the way that you interact with developers and /or contractors?
    1. Yes
    2. No
       a. If yes, what types of changes do you expect?

       _____

       _____

18. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency VT or Burlington Electric Department assistance in the future?
    1. Very likely
    2. Somewhat likely
    3. Not at all likely
       a. Why do you say that?

       _____

       _____

19. Finally, I would like to know if there is anything that you would recommend that would improve Efficiency Vermont's services?

That is all the questions that I have today. Thank you for your time and help with this effort.

DRAFT 2001 MOTORS – VARIABLE FREQUENCY DRIVE (VFD) MOTOR SYSTEMS SUPPLIER INTERVIEW GUIDE

1/23/02

Name: _____ Title _____
Firm: _____
Phone number: _____ Date of interview: _____
Length of Interview _____ Conducted by (initials) _____

Introduction

Hello, my name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling today to talk with suppliers of motor equipment in Vermont This is not a sales call. As a key person in this market, I would like to ask you some questions. My questions will take about 20 minutes; your responses will remain confidential.

Is this a good time for you to talk, or can we arrange a more convenient time?
Set appointment: _____

If unwilling to talk, see if they can identify another informant.

Thanks for agreeing to discuss motors equipment with me today.
My questions will help us understand how buildings are built in Vermont and how motor equipment is included in these buildings.

Screening Questions

A. First let me confirm that your company does sell motors or VFDs to firms for installation in Vermont.
   1. Yes
   2. No **(Thank and terminate)**

B. If yes, in the past 12 months, approximately what percent of **your** motor equipment sales was sold for installation in Vermont? ____%
   (**If under 10%, thank and terminate**)
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**

C. I will read three categories, please tell me what proportion of your sales are for each.
   a. Commercial facilities (such as offices, retail space, restaurants)? %: _____
   b. How about government, health care, or educational facilities? %: _____
   c. Industrial or warehouse facilities? % ____
   998 = Unable to Estimate **(Thank and terminate)**
   999 = Missing **(Thank and terminate)**
   Total = 100%

All of the questions in this survey will ask about your commercial and industrial motor technology sales for installation in Vermont over the past twelve months.

1. Which of the following best describes your commercial and industrial motor technology supply business? (check all that apply)
   1. Motor technology supplier only
   2. Manufacturer's rep
   3. General Industrial supplier
   4. Other _____

2. Do you have an exclusive relationship with a single motor manufacturer?
   1. Yes
   2. No
   If yes, which brand _____

3. I am going to read you several features of motor technologies customers may think are important. Using a scale of 1-5, where 1 is not at all important to customers and 5 is very important to customers. Please rate each of the following features of motor technologies?
   1= not at all important
   5= very important
   a. Initial Price
   b. Energy Savings
   c. Availability
   d. Reliability
   e. Quality
   f. Brand
   g. Durability
   h. Incentives/Rebates

4. Do you ever actively promote or recommend motors that significantly exceed typical standard motor efficiencies?
   1. Yes
   2. No

   =➔ if yes
   a. What percent of the time do you recommend or promote these motor technologies? _____%
   b. Does this vary by type of project?
      1. Yes
      2. No
   c. If yes, How does it vary?

5. Do you ever actively promote or recommend VFDs to customers installing new motors or retrofitting existing ones?
   1. Yes
   2. No

   =➔ if yes
   a. What percent of the time when a VFD is appropriate do you recommend or promote them? _____%
   b. Does this vary by type of project?
      1. Yes
      2. No (skip to d)
   c. If yes, How does it vary?
   d. Using a scale of 1 to 5, where one is never and 5 is all the time, how often do you emphasize each of the following when promoting high efficiency motors or VFDs? *(check all that apply – Do not read list)*
      a. Lower life cycle cost
      b. Environmental benefits
      c. Incentives available
      d. Energy cost savings

6. I'd like you to think about your sales for three phase integral horsepower AC motors including those for the OEM market. Please estimate the proportion of your total sales (by number of units) accounted for by:

   a. 1 to 5 hp motors _____%
   b. 6 to 20 hp motors _____%
   c. 21 to 75 hp motors _____%
   d. 76 to 200 hp motors _____%

7. Now thinking about your VFD sales (by number of units), please estimate the proportion of sales accounted for by:
   a. VFDs for HVAC applications _____%
   b. VFDs for industrial process applications <5 hp _____%
   c. VFDs for industrial process applications 6-20hp _____%
   d. VFDs for industrial process applications >21 hp _____%

8. What is your estimate of your firm's total annual motor and VFD sales revenue? _____

9. I am going to read you several features that you may emphasize when selling high efficiency VFDs to customers. Using a scale of 1-5 where 1 is not at all a selling feature and 5 is very much a selling feature, please indicate how you rate each as a selling feature for VFDs.
   1= not a selling feature
   5= very much a selling feature
   a. Life Cycle Cost
   b. Maintenance
   c. Durability
   d. Productivity benefits
   e. Environmental benefits
   f. Energy (Cost) Savings
   g. Incentives / Rebates available
   h. Initial Cost

10. On a scale of 1 to 10 - where 1 represents having almost no knowledge and 10 is extremely knowledgeable – How familiar would you say you are with variable frequency drives?

Almost No knowledge									extremely knowledgeable
1	2	3	4	5	6	7	8	9	10

11. On a scale of 1 to 10 where 1 indicates no interest, and 10 indicates extremely high interest – How would you rate your customers' interest in variable frequency drives?

No interest at all									High interest
1	2	3	4	5	6	7	8	9	10

12. In the past 12 months, would you say that your customers' willingness to adopt variable frequency drives has:
    1. Decreased
    2. Increased
    3. Remained the same

These are my last set of questions. The first concerns the ACT 250 process.

13. Are you familiar with ACT 250?
    1. Yes
    2. No (skip to 14)

    ====>If yes,

    a. Compared to customers who do not have to comply with Act 250, how likely are customers that must comply with Act 250 to purchase or specify variable frequency drives?
        i. More likely
        ii. Less likely
        iii. Just as likely
    b. How about variable frequency drives, compared to customers who do not have to comply with Act 250, how likely are customers that must comply with Act 250 to purchase or specify highly efficient motors?
        i. More likely
        ii. Less likely
        iii. Just as likely

14. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    1. Yes
    2. No

    ====>If yes,

    a. What is the name of the organization? _____

If they mention Efficiency Vermont, Vermont Efficiency, the Efficiency Utility or EVT skip to 15.

If they mention anything else ask 14b.

b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
    1. Yes
    2. No (thank and terminate)

15. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
    1. Yes
    2. No (Skip to 20)

    ==>If Yes,

    a. Did you or your firm contact them or did they contact you?
        1. We contacted them
        2. They contacted us
        3. Both
    b. Did any of your customers ask that you contact Efficiency Vermont or Burlington Electric Department?
        1. Yes
        2. No
    c. What was the purpose of your contact with Efficiency Vermont or Burlington Electric Department?

16. Have you used any of Efficiency VT's services in the past year?
    1. Yes
    2. No (Skip to 20)

    ==>Which of these services have you used?

    a. Marketing assistance Yes No
    b. Rebates Yes No
    c. Attended conference in February Yes No
    d. Other (specify) _____ Yes No

17. On a scale of one to five where one is not at all satisfied and 5 is very satisfied, How satisfied were you with.
    a. Efficiency VT's Knowledge of energy efficiency solutions 1 2 3 4 5
    b. Efficiency VT's Responsiveness to project needs 1 2 3 4 5
    c. The Usefulness of information provided by Efficiency VT 1 2 3 4 5
    d. The Quality of services provided by Efficiency VT 1 2 3 4 5
    e. Could you please describe your experience with Efficiency VT?

    _____

    _____

18. Do you think that your experience with Efficiency VT will influence you to stock more, the same, or less high efficiency HVAC units in future projects?
    1. More
    2. The same
    3. Less

19. Do you think that your experience with Efficiency VT will influence the way that you interact with developers and /or contractors?
    1. Yes
    2. No
        a. If yes, what types of changes do you expect?

        _____

        _____

20. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency VT or Burlington Electric Department assistance in the future?
    1. Very likely
    2. Somewhat likely
    3. Not at all likely
        a. Why do you say that?

        _____

        _____

21. Finally, I would like to know if there is anything that you would recommend that would improve Efficiency Vermont's services?

That is all the questions that I have today. Thank you for your time and help with this effort.

2001 MECHANICAL CONTRACTOR SURVEY
REVISED 12/18/01

Name: _____

Firm: _____

Phone number: _____ Date of interview: _____

My name is _____-with Action Research. I am calling on behalf of the Vermont Department of Public Service. We are talking to mechanical contractors today about current construction practices for energy systems in nonresidential buildings. This is not a sales call. Could you suggest the name of the owner or a lead supervisor with your firm's firm that I might talk with briefly? [Interviewer: if asked this is NOT about regulatory enforcement, it is just a market research project to understand the type of construction practices used by builders in Vermont.]

Screening Question

A. First let me confirm that your firm's firm provides mechanical contracting services for commercial or industrial buildings.
Yes
No **(Thank and terminate)**

B. About what proportion of the work your firm did in the past year was for:
   a. Commercial facilities (such as offices, retail space, restaurants)?
   _____%
   b. How about government, health care, or educational facilities?
   _____%
   c. Industrial or warehouse facilities?
   _____%
   d. How about homes, apartments, dorms or assisted living buildings?
   _____%

{If residential (d) = 100%, thank and terminate}

C. What percent of firm's projects in Vermont in the past year have been?
Small packaged HVAC units _____
Medium sized HVAC units _____
Large DX (direct exchange cooling) and chiller systems _____

Quotas: 5 completes for each category where at least 25% of their activities is in that category. Most likely to achieve quotas in small and medium, challenge is large DX and chillers. When quota is filled, thank and terminate.

In all of the questions in this survey I want you to think only about the commercial and industrial projects in Vermont that your firm worked on in the past year.

1. Approximately how many projects did your firm work on in Vermont over the past year: _____
   1a. Of these projects what percent were design/build projects? ___

2. How many of these projects were:
   a. Major renovation (such as a gut remodel) of existing structures _____
   b. Remodel of existing structures _____
   c. New construction _____
   d. Equipment replacement _____

3. What proportion of your firm's projects in the past year were conducted for:
   a. Government, or quasi-governmental clients using public funds? ____
   b. Private sector clients (including private non-profits)? _____
   (a+b=100%)

4. What proportion of your firm's projects in the past year were conducted for:
   a. Owners that planned to occupy the building? ____
   b. Owners that planned to lease the building? ____
   c. Owners that planned to sell the building upon completion? ____
   d. (Don't know what the owner planned to do.) _____
   (a+b+c+d = 100%)

5. About how many people work for your firm's firm: _____

6. What is your role or title? _____

7. How many years has your firm's company been contracting projects for non-residential buildings? _____

Now I would like to ask you about the types of equipment you install.

9. First I would like to ask you about your experience with some construction practices. Please use a scale of 1-5 where 1 is not at all experienced with the practice and 5 is very experienced with the practice.
   a. High efficiency HVAC
   b. High efficiency HVAC alternatives (such as ground source heat pumps, or thermal energy storage)
   c. variable speed drives
   d. Variable air volume fans
   e. Energy management systems
   f. Third party commissioning of equipment installation and operation
   g. Life cycle costing
   h. Energy analysis of HVAC options
   i. On-site generation such as combined heat and power (co-generation) or micro-turbines

10. Do your firm's marketing materials discuss your capabilities in energy-efficient construction or green building practices?
    Yes
    No
    DK

    10a. If yes, how do your materials discuss your capabilities?

11. In the past year, have you talked with a general contractor, a building owner, an engineering consultant or an architect about the energy-consumption implications of different construction approaches or different equipment choices for at least one project?
    Yes
    No
    DK

    11a. Did any of these discussions include a review of life cycle cost?
    Yes
    No

11b. Did any of these discussions include an energy analysis of different HVAC options?
Yes
No

11c. How many of projects included such discussions _____

12. In the past year, have you worked on any of the projects that incorporated d**ay lighting** features in the design?
Yes
No
DK

==>If Yes
12a. How many of your firm's projects included day lighting: _____

12b. How many of these projects lead to changes in the HVAC system design to accommodate the effect of the day lighting system on heating and cooling needs?_____

12c. How many of these projects were for new construction or renovations? _____

13. In the past year, did any of your firm's projects have **HVAC systems** that were more efficient than required by ASHRAE 90.1 1989 standards?
Yes
No
DK

==>If Yes
13a. How many of your firm's projects exceeded ASHRAE 90.1, 1989? {Interviewer make sure to stress the 1989} _____

13b. What percent were new construction or renovation projects? ____

13c. How many of your firm's projects exceeded ASHRAE 90.1, 1999? {Interviewer make sure to stress the 1999} _____

If greater than 0
13c1. What percent were new construction or renovation projects? ____

13d. Thinking of your firm's new construction and renovation projects, did any include:

i. High efficiency chillers? Y N
ii. High efficiency packaged HVAC systems? Y N
iii. Ground source heat pumps? Y N
iv. Thermal energy storage? Y N
v. A ventilation system that uses variable fan speeds, variable air volume (VAV) systems, or optimizes ventilation rates? Y N
vi. Programmable thermostats? Y N
vii. Energy management system controls for optimal start? Y N

13e. Thinking of your firm's remodel and equipment replacement projects, did any include:

i. High efficiency chillers? Y N
ii. High efficiency packaged HVAC systems? Y N
iii. Ground source heat pumps? Y N
iv. Thermal energy storage? Y N
v. A ventilation system that uses variable fan speeds, variable air volume (VAV) systems, or optimizes ventilation rates? Y N
vi. Programmable thermostats? Y N
vii. Energy management system controls for optimal start? Y N

14. When sizing the HVAC system, what percent of your new construction renovation projects:
Use rules of thumb (sq. ft. per ton) to size the system _____
Use software modeling ____
Use manual engineering calculations? _____

14.a. When sizing HVAC systems for remodeling and replacement projects for what percent of them do you:
Replace with the same size _____
Use rules of thumb (sq. ft. per ton) to size system _____
Use software modeling ____
Use manual engineering calculations? _____

15. Thinking about all of new construction and renovation projects in the past year, what percentage included each of the following

a. No economizer. _____
b. Dry bulb economizer _____
c. Single enthalpy economizer _____
d. Dual enthalpy economizer _____

15a. Now thinking about all of remodel and equipment replacement projects in the past year, what percentage included each of the following
   a. No economizer. _____
   b. Dry bulb economizer _____
   c. Single enthalpy economizer _____
   d. Dual enthalpy economizer _____

16. In your firm's experience, who makes the decision about which HVAC systems to install in a new construction or renovation project? (read list)
   1. Architect
   2. Engineer
   3. Building Owners
   4. General Contractor
   5. Mechanical contractor
   6. Electrical or lighting contractor
   7. Somebody else, specify _____
   8. DK

17. In your firm's experience, who makes the decision about which HVAC systems to install in a remodel or a equipment replacement project? (do not read unless asked)
   1. Architect
   2. Engineer
   3. Building Owners
   4. General Contractor
   5. Mechanical contractor
   6. Electrical or lighting contractor
   7. Somebody else, specify _____
   8. DK

18. For these different construction practices we have just been discussing. What are the reasons that you sometimes have projects that incorporate these practices and sometimes do not?

19. In the past year did you install an **on-site generation system** (e.g., solar, wind, co-generation, micro-turbine) for any projects?

   ==> If Yes:
   19a. describe: _____

19b. How many or what % of your firm's projects included on-site generation _____

20. In the past year, have any of your firm's building projects been "commissioned" by a certified and independent third party to ensure proper installation and operation of equipment?
Yes
No
DK

==>If Yes ask:
20a. How many of firm's projects have been commissioned? _____

20b. What percent were new construction or renovation projects?
_____

My next questions concern the ACT 250 process.

21. Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
Yes
No
DK

=➔ If yes
21a. For how many projects? _____

21b. In your firm's experience, do Act 250 projects typically incorporate more, the same or less energy efficiency features than non-Act 250 projects?
more
the same
less
DK

21c. Do Act 250 projects typically use more, the same or less help from outside consultants to address energy efficiency than non-Act 250 projects?
more
the same
less
DK

21d. Are you more, the same or less likely to participate in or involve outside programs or resources (e.g., government, utility, etc.) on Act 250 projects than on non-Act 250 projects?
more
the same
less
DK

21e. In your firm's opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency being incorporated in buildings than without ACT 250?
more
the same
less
DK

The next questions concern attitudes about energy.

22. In the past year, have your firm's clients' been less concerned, more concerned or had about the same level of concern for energy use of their building as compared with previous years?
1. Less concerned
2. More concerned
3. Or about the same level of concerned

23. I will read a factor, and then you let me know to what extent the factors is a problem for you in trying to use high efficiency features in your firm's construction projects. Use "1" if the factor is not a problem at all and "5" if the factor is a major problem.

    23a. The cost of high efficiency products 1 2 3 4 5

    23b. The availability of high efficiency products

    23c. Getting the client to consider high efficiency options.

    23d. Getting the general contractor to consider high efficiency options

    23e. Getting the architect to consider high efficiency options.

    23f. Getting accurate and objective information about high-efficiency alternatives

    23g. Code requirements

    23h. Other problems (please specify and rate 1-5)

These are my last questions.

24. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    Yes
    No
    DK

    24a. If yes. What is the name of the organization?

    If they mention Efficiency Vermont, Vermont Efficiency, or EVT skip to 24
    If they mention anything else ask 24b

24b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
Yes
No
DK
==> If No or DK to 24b, thank and terminate

25. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
Yes
No
DK
=➔ if yes
25a. Which one?
1. Efficiency Vermont
2. Burlington Electric Department, or
3. Both

25b. Did you contact them or did they contact you?
1. I contacted them
2. They contacted me
3. Both

26. Have you conducted any projects with Efficiency Vermont or Burlington Electric Department's assistance?
Yes
No (Skip to 29)
DK

==>If Yes, ask:
26a Did any clients request this?
Yes
No
26b. How many projects used Efficiency Vermont or Burlington Electric Department assistance? _____

27. Which of the following services have you used?
    1. Attended Building Solutions conference in February
       Yes
       No
       DK

    2. Technical assistance for ACT 250 new construction or renovation project
       Yes
       No
       DK

    3. Technical assistance for NON ACT 250 new construction or renovation project
       Yes
       No
       DK
    4. Technical assistance for remodeling or equipment replacement project
       Yes
       No
       DK

    5. Rebates for lighting
       Yes
       No
       DK

    6. Rebates for HVAC
       Yes
       No
       DK

    7. Rebates for motors
       Yes
       No
       DK

28. On a scale of 1 to 5 where 1 is not at all satisfied and 5 is very satisfied, How satisfied were you with.

    28a. Efficiency Vermont's Knowledge of energy efficiency solutions
    1 2 3 4 5

    28b. Efficiency Vermont's Responsiveness to our project needs
    1 2 3 4 5

    28c. The Usefulness of information provided by Efficiency Vermont
    1 2 3 4 5

    28d. The Quality of services provided by Efficiency Vermont
    1 2 3 4 5

    28e. For any respondent with one or more responses = 1 or 2, ask: Could you please describe what was unsatisfactory about Efficiency Vermont?

    28f. Do you think that your firm's experience with Efficiency Vermont will lead to your firm's including more, the same, or less energy efficiency solutions in future projects
    More
    The same
    Less
    DK

29. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency Vermont or BED assistance on a project in the future
    Very likely
    Somewhat likely
    Not at all likely
    DK

    29a. Why do you say that?

30. Before we close, do you have any final comments or recommendations for how to improve the services of Efficiency Vermont?

Thank you for your firm's time.

2001 ELECTRICAL CONTRACTOR SURVEY
REVISED 12/18/01

Name: _____

Firm: _____

Phone number: _____ Date of interview: _____

My name is _____-with Action Research. I am calling on behalf of the Vermont Department of Public Service. We are talking to electrical and lighting contractors today about current construction practices for energy systems in nonresidential buildings. This is not a sales call. Could you suggest the name of the owner or a lead supervisor with your firm that I might talk with briefly? [Interviewer: if asked this is NOT about regulatory enforcement, it is just a market research project to understand the type of construction practices used by builders in Vermont.]

Screening Question (could be asked of the receptionist if need to wait to reach a contact)

A. First let me confirm that your firm provides electrical or lighting contracting services for commercial or industrial buildings.
Yes
No **(Thank and terminate)**

B. About what proportion of the work your firm did in the past year was for:
   a. Commercial facilities (such as offices, retail space, restaurants)?
   _____%
   b. How about government, health care, or educational facilities?
   _____%
   c. Industrial or warehouse facilities?
   _____%
   d. How about homes, apartments, dorms or assisted living buildings?
   _____%

{If residential (d) = 100%, thank and terminate}

In all of the questions in this survey I want you to think only about the commercial and industrial projects in Vermont that your firm worked on in the past year.

1. Approximately how many projects did your firm work on in Vermont over the past year: _____

   1a. Of these projects what percent were design/build projects? ___

2. How many of these projects were:
   a. Major renovation (such as a gut remodel) of existing structures _____
   b. Remodel of existing structures _____
   c. New construction _____
   d. Equipment replacement _____

3. What proportion of your firm's projects in the past year were conducted for:
   a. Government, or quasi-governmental clients using public funds?
   b. Private sector clients (including private non-profits)?
   (a+b=100%)

4. What proportion of your firm's projects in the past year was conducted for:
   a. Owners that planned to occupy the building?
   b. Owners that planned to lease the building?
   c. Owners that planned to sell the building upon completion?
   d. (Don't know what the owner planned to do.)
   (a+b+c+d = 100%)

5. About how many people work for your firm: _____

6. What is your role or title? _____

7. How many years has your company been contracting projects for non-residential buildings? _____

Now I would like to ask you about the types of equipment you install.

9. First I would like to ask you about your experience with some construction practices. Please use a scale of 1-5 where 1 is not at all experienced with the practice and 5 is very experienced with the practice.
   a. High efficiency lighting
   b. T-5 lighting
   c. LED and low voltage lights
   d, Occupancy sensors
   e. Automatic daylight dimming
   f. Building-wide lighting control systems
   g. Energy management systems
   h. Third party commissioning of equipment installation and operation
   i. Life cycle costing
   j. Energy analysis of lighting options
   k. On-site generation such as combined heat and power (co-generation) or micro-turbines

10. Do your firm's marketing materials discuss your capabilities in energy-efficient construction or green building practices?
    Yes
    No
    DK

    10a. If yes, how do your materials discuss your capabilities?

11. In the past year, have you talked with a general contractor, a building owner, an engineering consultant or an architect about the energy-consumption implications of different construction approaches or different equipment choices for at least one project?
    Yes
    No
    DK

    ==>If Yes, ask:
    11a. Did any of these discussions include a review of life cycle cost?
    Yes
    No

11b. Did any of these discussions include an energy analysis of different lighting options?
Yes
No

11c. How many of projects included such discussions _____

12. In the past year, have you worked on any of the projects that incorporated d**ay lighting** features?
Yes
No
DK

==>If Yes ask:
12a. How many projects included day lighting? _____

12b. How many of the day lighting projects include specific lighting features (such as automatic dimming systems) designed to maximize the benefit of the day lighting? _____

12c. What percent of these projects were new construction or renovations?
_____

13. In the past year, have you worked on any projects that included **Lighting systems** that were more efficient than required by ASHRAE 90.1 1999 standards?
Yes
No

=>If yes:
13 a. How many projects included systems more efficient than ASHRAE 90.1?

13b. What percent of these projects were new construction or renovation?
_____

13c. Thinking about your firm's new construction and renovation projects, about what percent use:

i. T2 or T5 fixtures? _____
ii. How about compact fluorescent fixtures? _____
iii. How about T8 fixtures? _____
iv. T12 fixtures? _____
v. High-bay fluorescent fixtures _____
vi. How about occupancy sensors _____
vii. Photocells with dimming ballasts for automatic daylight dimming? _____
viii. Controls, such as switching strategies, staging sequences, or stepped controls? _____
ix. Building wide scheduling _____
x. High intensity discharge lamps _____
xi. Of those using high intensity discharge lamps, what percent included pulse start MH? _____

13d. Now thinking about your firm's remodel and equipment replacements projects, about what percent use:

i. T2 or T5 fixtures? _____
ii. How about compact fluorescent fixtures? _____
iii. How about T8 fixtures? _____
iv. T12 fixtures? _____
v. High-bay fluorescent fixtures _____
vi. How about occupancy sensors _____
vii. Photocells with dimming ballasts for automatic daylight dimming? _____
viii. Controls, such as switching strategies, staging sequences, or stepped controls? _____
ix. Building wide scheduling _____
x. High intensity discharge lamps _____
xi. Of those using high intensity discharge lamps, what percent included pulse start MH? _____

14. In your experience, who makes the decision about whether to include energy efficiency lighting in a new construction or renovation project? (read list)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

15. In your experience, who makes the decision about whether to include energy efficiency lighting in a remodel or an equipment replacement project? (do not read list unless asked)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

16. For these different construction practices we have just been discussing. What are the reasons that you sometimes have projects that incorporate these practices and sometimes do not?

17. In the past year, have any of your firm's lighting projects been "commissioned" by a certified and independent third party to ensure proper installation and operation of the equipment?
    Yes
    No
    DK

    ==>If Yes ask

    17a. How many projects have been commissioned? _____

    17b. What percent were new construction or renovations projects? _____

My next questions concern the ACT 250 process.

18. Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
Yes
No
DK

=➔ If yes
18a. For how many projects? _____

18b. In your experience, do Act 250 projects typically incorporate more, the same or less energy efficiency features than non-Act 250 projects?
more
the same
less
DK

18c. Do Act 250 projects typically use more, the same or less help from outside consultants to address energy efficiency than non-Act 250 projects?
more
the same
less
DK

18d. Are you more, the same or less likely to participate in or involve outside programs or resources (e.g., government, utility, etc.) on Act 250 projects than on non-Act 250 projects?
more
the same
less
DK

18e. In your opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency being incorporated in buildings than without ACT 250?
more
the same
less
DK

The next questions concern attitudes about energy.

19. In the past year, have your firm's clients' been less concerned, more concerned or had about the same level of concern for energy use of their building as compared with previous years?
    1. Less concerned
    2. More concerned
    3. Or about the same level of concerned

20. I will read a factor, and then you let me know to what extent the factors is a problem for you in trying to use high efficiency features in your firm's construction projects. Use "1" if the factor is not a problem at all and "5" if the factor is a major problem.

    20a. The cost of high efficiency products 1 2 3 4 5

    20b. The availability of high efficiency products

    20c. Getting the client to consider high efficiency options.

    20d. Getting the general contractor to consider high efficiency options

    20e. Getting the architect to consider high efficiency options.

    20f. Getting accurate and objective information about high efficiency options

    20g. Code requirements

    20h. Other problems (please specify and rate 1-5)

These are my last questions.

21. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    Yes
    No
    DK

    21a. If yes. What is the name of the organization?

If they mention Efficiency Vermont, Vermont Efficiency, or EVT skip to 22

If they mention anything else ask 21b

21b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Vermont Efficiency Utility?
Yes
No
DK

==> If No or DK to 21b, thank and terminate

22. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
Yes
No (skip to 26)
DK

=➔ if yes

22a. Which one?
1. Efficiency Vermont
2. Burlington Electric Department, or
3. Both

22b. Did you contact them or did they contact you?
1. I contacted them
2. They contacted me
3. Both

23. Have you conducted any projects with Efficiency Vermont or Burlington Electric Department's assistance?
Yes
No
DK

==>If Yes, ask:

23a Did any clients request this?
Yes
No

23b. How many of projects used Efficiency Vermont or Burlington Electric Department assistance? _____

24. Which of the following services have you used?

1. Attended Building Solutions conference in February
   Yes
   No
   DK

2. Technical assistance for ACT 250 new construction or renovation project
   Yes
   No
   DK

3. Technical assistance for NON ACT 250 new construction or renovation project
   Yes
   No
   DK

4. Technical assistance for remodeling or equipment replacement project
   Yes
   No
   DK

5. Rebates for lighting
   Yes
   No
   DK

6. Rebates for HVAC
   Yes
   No
   DK

7. Rebates for motors
   Yes
   No
   DK

25. On a scale of 1 to 5 where 1 is not at all satisfied and 5 is very satisfied, How satisfied were you with.

    25a. Efficiency Vermont's Knowledge of energy efficiency solutions
    1 2 3 4 5

    25b. Efficiency Vermont's Responsiveness to our project needs
    1 2 3 4 5

    25c. The Usefulness of information provided by Efficiency Vermont
    1 2 3 4 5

    25d. The Quality of services provided by Efficiency Vermont
    1 2 3 4 5

    25e. For any respondent with one or more responses = 1 or 2, ask: Could you please describe what was unsatisfactory about Efficiency Vermont?

    25f. Do you think that your experience with Efficiency Vermont will lead to your including more, the same, or less energy efficiency solutions in future projects?
    More
    The same
    Less
    DK

26. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency Vermont or Burlington Electric Department assistance on a project in the future?
    Very likely
    Somewhat likely
    Not at all likely
    DK

    26a. Why do you say that?

27. Before we close, do you have any final comments or recommendations for how to improve the services of Efficiency Vermont?

Thank you for your time.

C/I GENERAL CONTRACTOR SURVEY
REVISED 12/17/01

Name: _____

Firm: _____

Phone number: _____ Date of interview: _____

My name is _____-with Action Research. I am calling on behalf of the Vermont Department of Public Service. We are talking to contractors today about current construction practices for energy systems in nonresidential buildings. This is not a sales call. Could you suggest the name of the owner or a lead supervisor with your firm that I might talk with briefly? [Interviewer: if asked this is NOT about regulatory enforcement, it is just a market research project to understand the type of construction practices used by builders in Vermont.]

Screening Question (could be asked of the receptionist if need to wait to reach a contact)

A. First let me confirm that your firm provides general contracting services for commercial or industrial buildings.
Yes
No **(Thank and terminate)**

B. About what proportion of the work your firm did in the past year was for:
   a. Commercial facilities (such as offices, retail space, restaurants)?
   _____%
   b. How about government, health care, or educational facilities?
   _____%
   c. Industrial or warehouse facilities?
   _____%
   d. How about homes, apartments, dorms or assisted living buildings?
   _____%

{If residential (d) = 100%, thank and terminate}

In all of the questions in this survey I want you to think only about the commercial and industrial projects in Vermont that your firm worked on in the past year.

1. Approximately how many projects did your firm work on in Vermont over the past year: _____

   1a. Of these projects what percent were design/build projects? ___

2. How many of these projects were:
   a. Major renovation (such as a gut rehab) of existing structures _____
   b. Remodel of existing structures _____
   c. New construction _____
   d. Equipment replacement _____

3. What proportion of your firm's projects in the past year was conducted for:
   a. Government, or quasi-governmental clients using public funds?
   b. Private sector clients (including private non-profits)?
   (a+b=100%)

4. What proportion of your firm's projects in the past year was conducted for:
   a. Owners that planned to occupy the building?
   b. Owners that planned to lease the building?
   c. Owners that planned to sell the building upon completion?
   d. (Don't know what the owner planned to do.)
   (a+b+c+d = 100%)

5. About how many people work for your firm: _____

6. What is your role or title? _____

7. How many years has your company been contracting projects for non-residential buildings? _____

Now I would like to ask you about the types of equipment you install.

9. First I would like to ask you about your experience with some construction practices. Please use a scale of 1-5 where 1 is not at all experienced with the practice and 5 is very experienced with the practice.
   a. High efficiency lighting
   b. Day lighting
   c. Lighting controls
   d. High efficiency HVAC
   e. High efficiency HVAC alternatives (such as: ground source heat pumps, or thermal energy storage)
   f. Variable speed drives
   g. Energy management systems
   h. Third party commissioning of equipment installation and operation
   i. Life cycle costing]
   j. Energy analysis of different options
   k. On-site generation such as combined heat and power (co-generation) or micro-turbines

10. Do your firm's marketing materials discuss your capabilities in energy-efficient construction or green building practices?
    Yes
    No
    DK

    10a. If yes, how do your materials discuss your capabilities?

11. In the past year, have you talked with a subcontractor, a building owner, an engineering consultant or an architect about the energy-consumption implications of different construction approaches or different equipment choices for at least one project?
    Yes
    No
    DK

    11a. Did any of these discussions include a review of life cycle cost?
    Yes
    No

11b. Did any of these discussions include an energy analysis of different options?
Yes
No

11c. How many of projects included such discussions _____

12. In your experience, who normally makes the decision about the energy use and equipment choices? (read list)
1. Architect
2. Engineer
3. Building Owners
4. General Contractor
5. Mechanical contractor
6. Electrical or lighting contractor
7. Somebody else, specify _____ (do not read)
8. DK (do not read)

13. Does this vary by size of project?
Yes
No
If yes: Please describe how it varies._____

14. In the past year, have you worked on any of the projects that incorporated. **Daylighting** features.
Yes
No
DK

==>If Yes to ask: Did the day lighting projects include.

14a. **Shading** devices, such as louvers, projections, light shelves
Yes
No

14b. **Roof** designs, such as skylights, clearstories, roof monitors, stepped roofs, or sawtooth roofs
Yes
No

14c. How many of your firm's projects included day lighting: _____

15. In your experience, for new construction and renovation projects, who makes the decision about whether to include energy efficient lighting in a building? (do not read)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

15a. How about for remodel and equipment replacement projects, {who makes the decision about whether to include energy efficient lighting in a building?} (do not read list unless needed – for text in {} brackets only read if contact needs full reminder, try not to overstate repetition)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

16. How about for HVAC systems for new construction and renovation projects, who makes the decision {about whether to include energy efficient heating cooling and ventilating systems in a building?} (do not read list)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

16a. And for HVAC remodel and equipment replacement projects, who makes the HVAC system decision {about whether to include energy efficient heating cooling and ventilating systems in a building?} (do not read list)

1. Architect
2. Engineer
3. Building Owners
4. General Contractor
5. Mechanical contractor
6. Electrical or lighting contractor
7. Somebody else, specify _____
8. DK

17. In the past year did you install an **on-site generation system** (e.g., solar, wind, co-generation, micro-turbine) based on energy requirements

==> If Yes:
17a. describe: _____

17b. How many of your firm's projects included on-site generation _____

18. In the past year, what were the typical R-values you used for the following items?

1. Wall insulation in new construction and renovation projects (R-value) _____ DK
2. Wall insulation in remodeling or equipment replacement projects (R-value) _____ DK
3. Roof insulation in new construction and renovation projects (R-value) _____ DK
4. Roof insulation in remodeling or equipment replacement projects (R-value) _____ DK

19. In your experience, who makes the decision about the type of building shell materials to use for a building? (do not read list)
    1. Architect
    2. Engineer
    3. Building Owners
    4. General Contractor
    5. Mechanical contractor
    6. Electrical or lighting contractor
    7. Somebody else, specify _____
    8. DK

20. In the past year, what percent of your firm's new construction and renovation projects used **Low E- Glazing**? _____

21. And, what percent of your firm's remodel or window replacement projects used **Low E- Glazing**? _____

22. In the past year how many of your firm's projects include specification for solar heat gain of:
    <0.4 _____
    0.41-0.5 _____
    0.51-0.6 _____
    0.61-0.7 _____
    >0.71 _____
    Dk what solar heat gain is

23. In the past year, have any of your firm's projects been "commissioned" by a certified and independent third party to ensure proper installation and operation of the equipment?
    Yes
    No
    DK

    ==>If Yes ask
    23a. How many projects have been commissioned? _____

    23b. What percent were new construction or renovation projects?
    _____

My next questions concern the ACT 250 process.

24. Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
Yes
No
DK

=➔ If yes
24a. For how many projects? _____

24b. In your experience do Act 250 projects typically incorporate more, the same or less energy efficiency features than non-Act 250 projects?
more
the same
less
DK

24c. Do Act 250 projects typically use more, the same or less help from outside consultants to address energy efficiency than non-Act 250 projects?
more
the same
less
DK

24d. Are you more, the same or less likely to participate in or involve outside programs or resources (e.g., government, utility, etc.) on Act 250 projects than on non-Act 250 projects?
more
the same
less
DK

24e. In your opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency features being incorporated in buildings than without ACT 250?
more
the same
less
DK

The next questions concern attitudes about energy.

25. In the past year, have your firm's clients' been less concerned, more concerned or had about the same level of concern for energy use of their building as compared with previous years?
    1. Less concerned
    2. More concerned
    3. Or about the same level of concerned

25. I will read a factor, and then you let me know to what extent the factor is a problem for you in trying to use high efficiency features in your firm's construction projects. Use "1" if the factor is not a problem at all and "5" if the factor is a major problem.

    25a. The cost of high efficiency products 1 2 3 4 5

    25b. The availability of high efficiency products

    25c. Getting the client to consider high efficiency options.

    25d. Getting the subcontractors to consider high efficiency options

    25e. Getting the architect to consider high efficiency options.

    25f. Getting accurate and objective information about high efficiency options

    25g. Code requirements

    25h. Other problems (please specify and rate 1-5)

These are my last questions.

26. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
    Yes
    No
    DK

    26a. If yes. What is the name of the organization?

    If they mention Efficiency Vermont, Vermont Efficiency, or EVT skip to 27

If they mention anything else ask 26b

26b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
Yes
No
DK

==> If No or DK to 26b, thank and terminate

27. Have you ever contacted or been contacted by Efficiency Vermont or by the Burlington Electric Department?
Yes
No
DK

==>If Yes,
27a. Which one?
1. Efficiency Vermont
2. Burlington Electric Department, or
3. Both

27b. Did you contact them or did they contact you?
1. I contacted them
2. They contacted me
3. Both

28. Have you conducted any projects in the past year with assistance from Efficiency Vermont or Burlington Electric Department?
Yes
No (Skip to 31)
DK

==>If Yes, ask:
28a Did any clients request this?
Yes
No

28b. How many projects used Efficiency Vermont or Burlington Electric Department assistance? _____

29a. Which of the following services from Efficiency Vermont have you used?

1. Attended Building Solutions conference in February
   Yes
   No
   DK

2. Technical assistance for ACT 250 new construction or renovation project
   Yes
   No
   DK

3. Technical assistance for NON ACT 250 new construction or renovation project
   Yes
   No
   DK

4. Technical assistance for remodeling or equipment replacement project
   Yes
   No
   DK

5. Rebates for lighting
   Yes
   No
   DK

6. Rebates for HVAC
   Yes
   No
   DK

7. Rebates for motors
   Yes
   No
   DK

30. On a scale of 1 to 5 where 1 is not at all satisfied and 5 is very satisfied, How satisfied were you with.

    30a. Efficiency VT's Knowledge of energy efficiency solutions
    1 2 3 4 5

    30b. Efficiency VT's Responsiveness to our project needs
    1 2 3 4 5

    30c. The Usefulness of information provided by Efficiency VT
    1 2 3 4 5

    30d. The Quality of services provided by Efficiency VT
    1 2 3 4 5

    30e. For any respondent with one or more responses = 1 or 2, ask: Could you please describe what was unsatisfactory about Efficiency VT?

    30f. Do you think that your experience with Efficiency VT will lead to your including more, the same, or less energy efficiency solutions in future projects
    More
    The same
    Less
    DK

31. Would you say you are very likely, somewhat likely or not at all likely to use Efficiency VT or Burlington Electric Department assistance on a project in the future?
    Very likely
    Somewhat likely
    Not at all likely
    DK

    31a. Why do you say that?

32. Before we close, do you have any final comments or recommendations for how to improve the services of Efficiency Vermont?

Thank you for your time.

DRAFT 2001 ARCHITECT INTERVIEW GUIDE
REVISED 11/21/01

Name: _____

Firm: _____

Phone number: _____ Date of interview: _____

My name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling to today to talk with architects about current architectural practices in Vermont. Can you suggest a principal or lead architect with your firm that I might talk with briefly?

A. First let me confirm that your firm provides architectural design services for commercial or industrial building construction.
Yes
No **(Thank and terminate)**

B. If yes, what sectors does your firm design for.

a. Commercial facilities (such as offices, retail space, restaurants)?
Yes ___ No ___ Elaboration: _____

b. How about government, health care, or educational facilities?
Yes ___ No ___ Elaboration: _____

c. Industrial or warehouse facilities?
Yes ___ No ___ Elaboration: _____

d. How about residential space (such as houses, apartments, or assisted living)?
Yes ___ No ___

{If exclusively residential, thank and terminate}

All of the questions in this survey are about the commercial and industrial projects that your firm worked on in Vermont over the past year.

1. Approximately how many projects did you work on in Vermont over the past year: _____

   1a. Of all of these projects, what percent were design/build projects? _____

2. Over the past year, which of the following types of activities has your firm done in Vermont?
   a. New construction (if necessary: construction on a cleared lot)
      Yes ___ No ___
   b. Renovation of existing structures (if necessary: renovation is a major or gut remodel)
      Yes ___ No ___
   c. Remodel of existing structures
      Yes ___ No ___

3. {For each category endorsed in 2} Over the past year how many of those projects in Vermont were concerned with:
   a. Renovation of existing structures _____
   b. Remodel of existing structures _____
   c. New construction _____

4. What proportion of your work in Vermont was conducted for:
   a. Government or quasi-governmental clients that were using public funds? _____%
   b. Private sector clients (including private non-profits)? _____%
      (a+b=100%)

5. What proportion of your work in Vermont was conducted for:
   a. Owners that planned to occupy the building?_____%
   b. Owners that planned to lease the building? _____%
   c. Owners that planned to sell the building upon completion? _____%
   d. (Don't know what the owner planned to do) _____%
   (a+b+c+d = 100%)

6. About how many designers (unlicensed OK) work for your firm: _____

7. What is your role or title? _____*{not necessary if clear its owner}*

8. How many years have you been practicing architecture? _____

9. What was the approximate total square footage of the projects you worked on in Vermont in the past year. _____

The next questions concern a number of things that architects might do as part of their design practices. **Thinking of the projects in Vermont you worked on in this past year**, I would like to know the number of these projects that reflect these elements in their final design.

My first questions concern the earliest stages of project design:

10. In the past year, did any of your clients raise the issue of concern for energy costs in the facility, or include energy-efficiency in their goals for the project?
    Yes
    No
    ==>If Yes, ask: 10a. # of projects: _____

11. How many of the projects you worked had a client who was committed to having a facility more energy-efficient than their last facility or than similar facilities in the state? By committed, I mean interested in considering the energy-use implications of different designs and willing to make some investment in energy-efficiency elements?
    ==> # of projects? _____

12. In the past year, has willingness to include energy efficiency in projects differed among different types of clients? {Probe: For example, does it differ between public or private funding, or between owner-occupants and owners who plan to lease, or for some business sectors—like education—but not others?}
    Yes
    No
    DK
    ==> If yes? a. # of projects? _____

13. Did you raise the issue of the facility's energy use with any clients that did not mention it, or did you raise the issue more frequently or give it more attention than your client was inclined to do?
Yes
No
==>If Yes, ask: 13a. # of projects: _____

14. Do your firm's marketing materials discuss your capabilities in energy-efficient design practices?
Yes
No

15. In the past year, have you engaged in **Pre-design activities** to address energy and resource savings project-wide?
Yes
No

==>If Yes, ask: Did that include...

Y	N	a. Setting energy efficiency goals or performance benchmarks
Y	N	b. Discussing with engineering consultants and contractors the energy-use implications of different approaches
Y	N	c. Discussing with your in-house team the energy-use implications of different design approaches
		d. How many projects included any of these pre-design activities: # ____

16. In the last year, for any of these projects in Vermont was the building's **Site** or **orientation** selected in large part due to solar access, shading, energy cost or other resource considerations
Yes
No
--->If yes: a. # of projects where this was reflected in the final design: _____#

The next set of questions relate to the building envelope and glazing:

17. In the past year, have you incorporated **passive systems** to augment the electromechanical building systems or **envelope designs** to reduce HVAC needs
Yes
No

==>If Yes, ask: Did that include...

Y N a. Optimizing the **thermal mass** of building or its **footprint**
Y N b. Selecting the building **skin**
Y N c. Designing passive **ventilation**
Y N d. Considering **solar** gain, night cooling, night flushing
Y N e. Some other passive systems (describe: _____
f. How many projects included any of these passive systems in the final design: __#
g. And of these projects, for how many did the final HVAC design or capacity also take into account these passive features? _____#

18. In the past year, have your projects incorporated **day lighting** features
Yes
No

==>If Yes, ask: Did that include...

Y N a. **Shading** devices, e.g., louvers, projections, light shelves
Y N b. **Roof** designs, e.g., skylights, clearstories, roof monitors, stepped roofs, sawtooth roofs
Y N c. Optimizing **daylight penetration** through location of windows in wall, floor to ceiling heights, floor plate configuration, etc.
Y N d. Including lots of windows *{==>this alone is not day lighting. Change response to Q7 from yes to no if this is the only action}*
e. How many projects included day lighting features in the final design: _____#
Y N f. Did any of these projects employ a day lighting **strategy** in contrast to including some day lighting **features?**

=➔ If yes?

g. How many projects had a day lighting strategy?: _____
Y N h. Of the projects that incorporated day lighting features in the final design, how many had specific lighting features designed to maximize the benefit of the day lighting (such as automatic dimming systems)?

=➔ If Yes,

i. How many projects included these specific lighting features? _____#

19. In the past year, did you specific **Low E- Glazing** for any of your projects in Vermont?
Yes
No
DK
====➔If yes, a. ask how many projects?. _____#

20. In the past year did you specify the **solar heat gain factor** on any of your projects in Vermont?
Yes
No

====➔ if Yes
a. How many of your projects include specification for solar heat gain of
<0.4 _____
0.41-0.5 _____
0.51-0.6 _____
0.61-0.7 _____
>0.71 _____

My next set of questions concern the buildings electromechanical systems:

21. In the past year, other than architects in your firm, what types of professionals contributed to the design of your projects' lighting systems?
Y N a. lighting designers in your firm?
Y N b. electrical engineers in your firm?
Y N c. Consulting lighting designers?
Y N d. Consulting electrical engineers?
Y N e. Consulting electrical contractors?
Y N f. Lighting suppliers or manufacturers reps?

22. Which professional typically took the lead? (If it varies get an explanation of why and how often? Size of project, client concerns, etc.)
Y N a. Members of your firm?
Y N b. Consulting lighting designers?
Y N c. Consulting electrical engineers?
Y N d. Consulting electrical contractors?
Y N e. Lighting suppliers or manufacturers reps?

23. Were you a participant in the design of the lighting systems for any of the projects you worked on in the past year?
Yes
No (If no skip to 26)
-----→ If yes, a. how many projects _____

24. In the past year, did your projects have **lighting systems** that were more efficient than required by ASHRAE 90.1 1999 standards?
a. # included in final design: _____#

25. In the past year, for any of your projects did you:
Y N DK a. Request your consultants or staff design energy-efficient lighting
Y N DK a. Specify **lower illumination** levels or **less lights** than typical; or use **spot or task lighting** instead of general illumination
Y N DK b. Specify occupancy **sensors** or photocells
Y N DK c. Specify **controls**, switching strategies, staging sequences, stepped controls
Y N DK d. Specify **indirect lighting** as a strategy to improve lighting quality and efficiency?
e. # included in final design: _____#

26. In the past year, other than architects in your firm what types of professionals contributed to the design of your projects' HVAC systems?
Y N a. Mechanical engineers in your firm?
Y N b. Consulting mechanical engineers?
Y N d. Consulting mechanical contractors?
Y N e. Equipment suppliers or manufacturers reps?

27. Which type of professional typically took the lead? (If it varies get an explanation of why and how often? Size of project, client concerns, etc.)
Y N a. Members of your firm?
Y N b. Consulting mechanical engineers?
Y N d. Consulting mechanical contractors?
Y N e. Equipment suppliers or manufacturers reps?

28. Were you a participant in the design of the HVAC systems for any of the projects you worked on in the past year?
Yes
No (If no skip to 31)
-----→ If yes, a. how many projects _____

29. In the past year, did your projects have **HVAC systems** that were more efficient than required by ASHRAE 90.1 1999 standards?
a. Number of projects included in final design: _____#

30. In the past year, for any of your projects did you:
Y N DK a. Request that your consultants or staff design an energy-efficient HVAC system to exceed ASHRAE 90.1?
Y N DK b. Make a selection among **different types** of chillers based on energy efficiency
Y N DK c. Make a selection among **alternatives to packaged HVAC** such as chillers, ground source heat pumps, or thermal energy storage based on energy requirements
Y N DK d. Design an energy-efficient **ventilation system** by using variable fan speeds, variable air volume (VAV) systems, or by optimizing ventilation rates
Y N DK e. Use controls, e.g., direct digital, integrated, user
Y N DK g. **Design the building** to optimize the factors that affect HVAC requirements
h. Number of projects included in final design: _____#

31. In the past year, did you choose among different **water heating** option for any of your projects based on energy requirements? (e.g., solar, instantaneous heating, heat recovery or reclaim, geothermal)
Yes
No
DK

==> If Yes: describe: _____
a. Number of projects included in final design: _____ #

The next questions address methods and tools you might use to assist in design

32. In the past year have you or your consultants used **computer models** to simulate the energy use of buildings or lighting
Yes
No

==>If Yes, ask: Did you use or ask your consultants to:

Y N DK a. Use models to **simulate building** energy use, e.g., Energy 10, DOE2, Energy Sim
Y N DK b. Use models to **simulate building cooling and heating** loads for HVAC equipment, e.g. Write N, CHVAC, DOE2
Y N DK c. Use models to **simulate lighting**, e.g., daylighting models, lighting simulation modes, photometric models
Y N DK d. Use any other simulation models (describe: _____)
e. For how many projects was modeling conducted: __ #
Y N f. Did any clients pay for this?

==> If Yes,
g. Number of projects where client paid: _____
Y N DK h. Did the use of computer models ever result in a more energy-efficient design being selected?

==> If Yes,
i. # of projects: _____

==➔ If No to
32b. What methods do you or your engineers typically use to size HVAC equipment?

33. In the past year have you or your consultants **compared design options** by estimating **life cycle cost** savings from downsized equipment, reduced energy use, maintenance, and replacement cost savings
Yes
No
DK

==>If Yes, ask:
a: Did you conduct formal or informal analyses:
formal
informal

===➔ if FORMAL

b. What number of projects used **formal** life cycle costing _____

c. Did any clients pay for this?
Yes
No

===> If yes,

d. # of projects: _____

34. In the last year have you used **consulting resources**—either people or reference materials—to assist with energy efficiency?
Yes
No
DK

==>If Yes, ask: Did you use:

Y N a. **Consultants** to address energy efficiency issues **on specific projects**
Y N b. **Consultants to educate the staff in general**
Y N c. Books, **journals, websites**, or CDs with energy efficient methods or strategies
Y N d. Any government or utility **programs to assist in addressing energy efficiency?**

==➔ If yes,

e. What program did you use :_____
Y N f. Some other sources (describe:_____

35. In the past year have you used **building commissioning** as a strategy to ensure quality buildings that perform efficiently and properly?
Yes
No

=➔If yes, Did you use a third party commissioning agent to review

Y N a. Designs
Y N b. Construction bids
Y N c. Verify proper installation and test operation of building equipment and systems
d. How many projects did you use a third party commissioning agent? _____

===➔ If no to

35 e. Why you did not use commissioning on your projects? (Do not read answers)

1. Don't know what commissioning is
2. Client unwilling to pay for it
3. Don't believe it is necessary or worth the cost
4. I don't want a third party checking on my work
5. The consultants I use don't want a third party checking on their work
6. Expert commissioning agents are not available locally
7. Buildings perform well without it.
8. Other (please specify)

36. Are there **any** energy efficiency suggestions or sustainability suggestions you have made to your clients in the last year that **we have not covered**?
Yes
No

==>If Yes, probe for specifics:

a. Describe: _____
b. The number of projects where included in final design: _____

My next questions concern the ACT 250 process.

37. Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
Yes
No
DK

=➔ If yes

a. For how many projects? _____

b. In your experience do Act 250 projects typically incorporate more, the same or less energy efficiency features than non-Act 250 projects?
more
the same
less
DK

c. Do Act 250 projects typically use more, the same or less help from outside consultants to address energy efficiency than non-Act 250 projects?
more
the same
less
DK

d. Are you more, the same or less likely to participate in or involve outside programs or resources (e.g., government, utility, etc.) on Act 250 projects than on non-Act 250 projects?
more
the same
less
DK

e. In your opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency being incorporated in buildings than without ACT 250?
more
the same
less
DK

f. In your experience would you say that you design projects differently for Act 250 than for non-Act 250 projects?
Yes
No

=====➔If Y:

g. What would you say is significantly different between Act 250 and non-Act 250 projects? _____

The next questions concern attitudes about energy.

38. In the past year, have your clients' been less concerned, more concerned or had about the same level of concern for energy use of their building as compared with previous years?
    1. Less concerned
    2. More concerned
    3. Or about the same level of concerned

39. I will read a statement, and then you let me know to what extent that factor is a problem for you in trying to use high efficiency features in your construction projects. Use "1" if the factor is not a problem at all and "5" if the factor is a major problem.

    a. Identifying energy efficient options
    1 2 3 4 5

    b. Assessing how well a given option will perform in a specific application
    1 2 3 4 5

    c. The availability of energy efficiency products
    1 2 3 4 5

    d. Getting the client to consider energy efficient options
    1 2 3 4 5

    e. Getting the consultants to consider energy efficient options
    1 2 3 4 5

    f. Getting the architects you work with to consider energy efficient options
    1 2 3 4 5

    g. Providing clients with reliable estimates of the **costs** of incorporating energy efficient features
    1 2 3 4 5

    h. Providing clients with reliable estimates of the **benefits** of incorporating energy efficient features.
    1 2 3 4 5

i. Getting the client to authorize the expense needed to research options, performance and costs
1 2 3 4 5

j. Identify consulting resources or other building professionals necessary to execute energy efficient design elements.
1 2 3 4 5

k. Code requirements
1 2 3 4 5

l. Are there any other things that present a problem for you incorporating energy efficiency options in your designs:
_____

These are my last questions.

40. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
Yes
No
DK

a. If yes. What is the name of the organization?

If they mention Efficiency Vermont, Vermont Efficiency, or EVT skip to 41

If they mention anything else ask 40b

b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
Yes
No
DK

==> If No or DK to 40b, thank and terminate

41. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
Yes
No
DK

==>If Yes,
a. Did you contact them or did they contact you?
I contacted them
They contacted me
Both

42. Have you conducted any projects with Efficiency Vermont or Burlington Electric Department's assistance?
Yes
No
DK

==>If Yes, ask:
a Did any clients request this?
Yes
No

b. How many of projects used EVT or BED assistance? _____

43. Have you used any of EVT's services in the past year?
Yes
No (Skip to 45)
DK (Skip to 45)

a. Which of these services have you used?

i. Project assistance
Yes
No
DK

ii. Rebate
Yes
No
DK

iii. Attended conference in February
Yes
No
DK

45. On a scale of one to five where one is not at all satisfied and 5 is very satisfied, How satisfied were you with.

a.	EVT's Knowledge of energy efficiency solutions	1	2	3	4	5
b.	EVT's Responsiveness to our project needs	1	2	3	4	5
c.	The Usefulness of information provided by EVT	1	2	3	4	5
d.	The Quality of services provided by EVT	1	2	3	4	5

e. For any respondent with one or more responses = 1 or 2, ask: Could you please describe what was unsatisfactory about EVT?

f. Do you think that your experience with EVT will lead to your including more, the same, or less energy efficiency solutions in future projects
More
The same
Less
DK

46. Would you say you are very likely, somewhat likely or not at all likely to use EVT or BED assistance on a project in the future
Very likely
Somewhat likely
Not at all likely
DK

=➔If not at all likely or somewhat likely,
a. why do you say that?

Thank you for your time.

DRAFT 2001 ENGINEERING INTERVIEW GUIDE
REVISED 11/21/01

Name: _____

Firm: _____

Phone number: _____ Date of interview: _____

My name is _____ with _____. I am conducting research for the Vermont Department of Public Service. I am calling to today to talk with architects about current architectural practices in Vermont. Can you suggest a lead engineer with your firm that I might talk with briefly?

A. First let me confirm that your firm provides engineering design services for commercial or industrial building construction.
Yes
No **(Thank and terminate)**

B. If yes, what sectors does your firm design for.
   a. Commercial facilities (such as offices, retail space, restaurants)?
      Yes ___ No ___ Elaboration: _____
   b. How about government, health care, or educational facilities?
      Yes ___ No ___ Elaboration: _____
   c. Industrial or warehouse facilities?
      Yes ___ No ___ Elaboration: _____
   d. How about residential space (such as houses, apartments, assisted living)?
      Yes ___ No ___

{If exclusively residential, thank and terminate}

All of the questions in this survey are about the commercial and industrial projects that your firm worked on in Vermont over the past year.

1. Approximately how many projects did you work on in Vermont over the past year: _____

1a. Of all of these projects, what percent were design/build projects? _____

2. Over the past year, which of the following types of activities has your firm done in Vermont?

   a. New construction (if necessary: construction on a cleared lot)
   Yes ___ No ___

   b. Renovation of existing structures (if necessary: renovation is a major or gut remodel)
   Yes ___ No ___

   c. Remodel of existing structures
   Yes ___ No ___

3. {For each category endorsed in 2} Over the past year how many of those projects in Vermont were concerned with:
   a. Renovation of existing structures _____
   b. Remodel of existing structures _____
   c. New construction _____

4. What proportion of your work in Vermont was conducted for:
   a. Government or quasi-governmental clients that were using public funds? _____%
   b. Private sector clients (including private non-profits)? ____%
   (a+b=100%)

5. What proportion of your work in Vermont was conducted for:
   a. Owners that planned to occupy the building? ___%
   b. Owners that planned to lease the building? ____ %
   c. Owners that planned to sell the building upon completion? ___ %
   d. (Don't know what the owner planned to do) ___ %
   (a+b+c+d = 100%)

6. About how many engineers (unlicensed ok) work for your firm: _____

7. What is your role or title? _____*{not necessary if clear its owner}*

8. For how many years have you been a licensed engineer? _____

9. What was the approximate total square footage of the projects you worked on in Vermont the past year. _____

The next questions concern a number of things that engineers might address in the project design phase. **Thinking of the projects in Vermont you worked on in this past year**, I would like to know the number of these projects that reflect these elements in their final design.

My first questions concern the earliest stages of project design:

10. In the past year, did any of your clients raise the issue of concern for energy costs in the facility, or include energy-efficiency in their goals for the project?
    Yes
    No
    ==>If Yes, ask: 10a. # of projects: _____

11. In the past year, how many of the projects you worked on had a client who was committed to having a facility more energy-efficient than similar facilities in the state? By committed, I mean interested in considering the energy-use implications of different designs and willing to make some investment in energy-efficiency elements?
    a. # of projects: _____

12. In the past year, has willingness to include energy efficiency in projects differed among different types of clients? {Probe: For example, does it differ between public or private funding, or between owner-occupants and owners who plan to lease, or for some business sectors—like education—but not others?}
    Yes
    No
    DK
    ==> If yes? a. # of projects? _____

13. Did you raise the issue of the facility's energy use with any clients that did not mention it, or did you raise the issue more frequently or give it more attention than your client was inclined to do?
Yes
No
==>If Yes, ask: 13a. # of projects: _____

14. Do your firm's marketing materials discuss your capabilities in energy-efficient design practices?
Yes
No

15. In the last year, have you engaged in **pre-design activities** to address energy and resource savings project-wide

==>If Yes, ask: Did that include...

Y N a. Setting energy efficiency goals or performance benchmarks
Y N b. Discussing with the architect and contractors the energy-use implications of different approaches
Y N c. Discussing with your in-house **team** the energy-use implications of different design approaches
d. How many projects included any of these pre-design activities: ___#

16. In the last year, for any of the projects, did you discuss how the building's **site** or **orientation** was going to impact its energy use due to solar access, shading, energy cost or other resource consideration?
Yes
No

=➔ if yes

a. What is the number of projects where this was reflected in the final design: _____#

My next questions concern the building envelope and glazing:

17. In the past year, have any of the projects you worked on incorporated **passive systems** to augment the electromechanical building systems or used **envelope designs** to reduce HVAC needs
Yes
No

==>If Yes, ask: Did that include a design:

Y N a. To optimize the **thermal mass** of building or its **footprint**
Y N b. To facilitate passive **ventilation**
Y N c. Using **solar** gain, night cooling, or night flushing
Y N d. Some other passive systems (describe: _____
e. How many projects included any of these passive systems in the final design: __#
f. And of these projects, for how many did the final HVAC design or capacity also take into account these passive features? _____#

18. In the last year, have any of the projects you worked on incorporated **day lighting** features?
Yes
No

==>If Yes, ask: Did the project(s).

Y N DK a. Include s**hading** devices, (e.g., louvers, projections, light shelves)
Y N DK b. Include daylight enhancing **Roof** designs, (e.g., skylights, clearstories, roof monitors, stepped roofs, sawtooth roofs)
Y N DK c. Optimize **daylight penetration** through location of windows in wall, floor to ceiling heights, floorplate configuration, etc.
Y N DK d. Include lots of windows *{==>this alone is not day lighting. Change response to Q7 from yes to no if this is the only action}*
e. What is the number of projects that included day lighting features in final design: _____#
Y N DK f. Did any of these projects employ a day lighting **strategy** in contrast to including some day lighting **features?**

=➔ If yes?

g. How many projects: _____

h Of the projects that incorporated day lighting features in the final design, how many included specific lighting features designed to maximize the benefit of the day lighting (such as automatic dimming systems)? _____#

19. In the past year, did you specify **low-e glazing** for any of your projects in Vermont?
Yes
No
==➔ if yes, how many projects included low-e glazing? _____#

20. In the past year, did you specify the **solar heat gain factor** for any of your projects in Vermont?
Yes
No

====➔ if Yes

a. How many of your projects include a solar heat gain factor specification of?
1. <0.4 _____
2. 0.41-0.5 _____
3. 0.51-0.6 _____
4. 0.61-0.7 _____
5. >0.71 _____

My next questions address the buildings electromechanical systems:

21. Were you a participant in the design of the lighting systems for any of the projects you worked on in the past year?
Yes
No (If no skip to 24)
-----➔ If yes, a. how many projects _____

21. In the past year, other than yourself in your firm, what types of professionals contributed to the design of your projects' lighting systems?

Y N a. Lighting designers in your firm?
Y N b. Electrical engineers in your firm?
Y N c. Consulting lighting designers?
Y N d. Consulting electrical engineers?
Y N e. Consulting electrical contractors?
Y N f. Architects from your firm?
Y N g. Architects from another firm?
Y N h. Lighting suppliers or manufacturers reps?

22. Which professional typically takes the lead in designing lighting systems? (If it varies get an explanation of why and how often? Size of project, client concerns, etc.)

Y N a. Architect in my firm?
Y N b. Architect in another firm
Y N c. Engineer in my firm?
Y N d. Consulting lighting designers?
Y N e. Consulting electrical engineers?
Y N f. Consulting electrical contractors?
Y N g. Lighting suppliers or manufacturers reps?

23. In the past year, did any of your projects incorporate **lighting systems** that were more efficient than required by ASHRAE 90.1, 1999 standards?
Yes
No

==>If Yes, ask: Did that include:

Y N DK a. Requesting that your **staff or consulting lighting designers** develop an energy-efficient lighting design
Y N DK b. Specify **lower illumination** levels or **less lights** than typical; or using **spot or task lighting** instead of general illumination
Y N DK c. Specify less lighting because of **day lighting features**
Y N DK d. Specify occupancy **sensors** or photocells
Y N DK e. Specify **controls**, switching strategies, staging sequences, stepped controls
Y N DK f. Specify indirect lighting as a strategy to improve lighting quality and efficiency
g. How many projects included these in final design: _____

24. Were you a participant in the design of the HVAC systems for any of the projects you worked on in the past year?
Yes
No (If no skip to 29)
-----→ If yes, a. how many projects _____

25. In the past year, other than yourself in your firm, what types of professionals contributed to the design of your projects' HVAC systems?

Y N a. Mechanical engineers in your firm?
Y N b. Consulting mechanical engineers?
Y N c. Consulting mechanical contractors?
Y N d. Architects from your firm?
Y N e. Architects from another firm?
Y N f. Equipment suppliers or manufacturers reps?

26. Which professional typically takes the lead in designing HVAC systems? (If it varies get an explanation of why and how often? Size of project, client concerns, etc.)

Y N a. Architect in my firm?
Y N b. Architect in another firm
Y N c. Mechanical engineer in my firm?
Y N d. Consulting mechanical engineers?
Y N e. Consulting mechanical contractors?
Y N f. Equipment suppliers or manufacturers reps?

27. Have you sought to design the **HVAC system** to be more efficient than required by ASHRAE 90.1 a999 standards?

Yes
No
DK

==>If Yes, ask, Did that include:

Y N DK a. Requesting that your consultants or staff design an energy-efficient HVAC system to exceed ASHRAE 90.1?
Y N DK b. Make a selection among different types of HVAC units based on energy efficiency
Y N DK c. Considering **alternatives to packaged HVAC** units such as chillers, ground source heat pumps or thermal energy storage based on energy requirements?
Y N DK d. Design an energy efficient **ventilation system**, by using variable fan speeds, variable air volume (VAV) systems, or by optimizing ventilation rates
Y N DK e. Use controls, e.g., direct digital, integrated, user
f. How many projects included these in the final design: _____#

==➔ if e=yes.

j. Specifically how many of the projects you worked on included Variable air volume systems? _____

28. What percentage of projects you worked on in the past year included each of the following

a. No economizer. _____
b. Dry bulb economizer _____
c. Single enthalpy economizer _____
d. Dual enthalpy economizer _____

29. In the past year, did you choose among different **water heating** options for any of your projects based on the energy requirements? (e.g., solar, instantaneous heating, heat recovery or reclaim, or geothermal)
Yes
No
DK

==> If Yes: describe: _____
a. Number of projects where included in final design: _____ #

The following questions relate to methods and tools you might use.

30. In the past year have you used **computer models** to simulate the energy use of buildings or lighting?
Yes
No

==>If Yes, ask: Did you, your staff or your consultants:

Y N DK a. Use models to **simulate building** energy use, e.g., Energy 10, DOE2, Energy Sim
Y N DK b. Use models to simulate building cooling and heating design loads for HVAC equipment sizing, e.g. Wright N, CHVAC, DOE2?
Y N DK c. Use of models to **simulate lighting**, e.g., daylighting models, lighting simulation modes
Y N DK d. Use any other simulation models (describe: _____)
e. For how many projects was modeling conducted: __ #
Y N f. Did any clients pay for this?

==> If Yes,
g. Number of projects where client paid: _____
Y N DK h. Did the use of computer models ever result in a more energy-efficient design being selected?
==> If Yes,
i. # of projects: _____

==➔ If No to

30b. What methods do you or your engineers typically use to size HVAC equipment?

31. In the past year have you, your staff or your consultants **compared design options** by estimating **life cycle cost** savings from downsized equipment, reduced energy use, maintenance, and replacement cost savings
Yes
No
DK

==>If Yes, ask:
a: Did you conduct formal or informal analyses:
_____Formal
_____Informal

===➔ if FORMAL
b. What number of projects used **formal** life cycle costing _____
c. Did any clients pay for this?
Yes
No

===> If yes,
d. # of projects: _____

32. In the last year have you used **consulting resources**—either people or reference materials—to assist with energy efficiency
Yes
No

==>If Yes, ask: Did you use:

Y N a. **Consultants** to address energy efficiency issues **on specific projects**
Y N b. **Consultants to educate the staff in general**
Y N c. Books, **journals, websites**, or CDs with energy efficient methods or strategies
Y N d. Any government or utility **programs to assist in addressing energy efficiency?**

==➔ If yes,

e. What program did you use:_____

Y N f. Other (describe:_____

33. In the past year have you used **building commissioning** as a strategy to ensure quality buildings that perform efficiently and properly?
Yes
No

==➔ If yes, Did you use a third party commissioning agent to review:

Y N a. System design
Y N b. Construction bids
Y N c. Verify proper installation and test operation of building equipment and systems
d. How many projects did you use a third party commissioning agent? _____

===➔ If no to

33 e. Why you did not use commissioning on your projects? (Do not read answers)

1. Don't know what commissioning is
2. Client unwilling to pay for it
3. Don't believe it is necessary or worth the cost
4. I don't want a third party checking on my work
5. The consultants I use don't want a third party checking on their work
6. Expert commissioning agents are not available locally
7. Buildings perform well without it.
8. Other (please specify)

34. Are there **any** energy efficiency suggestions or sustainability suggestions you have made in the last year that **we have not covered**?
Yes
No

==>If Yes, probe for specifics:

a. Describe: _____
b. How many projects included these in final design: _____

My next questions concern the ACT 250 process.

35. Have you been involved in the process to obtain ACT 250 permits, specifically, demonstrating that a project will meet the energy guidelines?
Yes
No
DK

=➔ If yes

a. For how many projects? _____

b. In your experience do Act 250 projects typically incorporate more, the same or less energy efficiency features than non-Act 250 projects?
more
the same
less
DK

c. Do Act 250 projects typically use more, the same or less help from outside consultants to address energy efficiency than non-Act 250 projects?
more
the same
less
DK

d. Are you more, the same or less likely to participate in or involve outside programs or resources (e.g., government, utility, etc.) on Act 250 projects than on non-Act 250 projects?
more
the same
less
DK

e. In your opinion, do you believe that Act 250 results in a higher, the same or a lower level of energy efficiency being incorporated in buildings than without ACT 250?
more
the same
less
DK

f. In your experience would you say that you design projects differently for Act 250 than for non-Act 250 projects?
Yes
No

=====➔If Y:

g. What would you say is significantly different between Act 250 and non-Act 250 projects? _____

The next questions concern attitudes about energy.

36. In the past year, have your clients' been less concerned, more concerned or had about the same level of concern for energy use of their building as compared with previous years?
1. Less concerned
2. More concerned
3. Or about the same level of concerned

37. I will read a statement, and then you let me know to what extent that factor is a problem for you in trying to use high efficiency features in your construction projects. Use "1" if the factor is not a problem at all and "5" if the factor is a major problem.

a. Identifying energy efficient options
1 2 3 4 5

b. Assessing how well a given option will perform in a specific application
1 2 3 4 5

c. The availability of products
1 2 3 4 5

d. Getting the client to consider energy efficient options
1 2 3 4 5

e. Getting the architects to consider energy efficient options
1 2 3 4 5

f. Getting the engineers you work with to consider energy efficient options
1 2 3 4 5

g. Providing clients with reliable estimates of the **costs** of incorporating energy efficient features into a design.
1 2 3 4 5

h. Providing clients with reliable estimates of the **benefits** of incorporating energy efficient features into a design.
1 2 3 4 5

i. Getting the client to authorize the expense needed to research options, performance and costs
1 2 3 4 5

j. Identify consulting resources or other building professionals necessary to execute energy efficient design elements
1 2 3 4 5

k. Code requirements
1 2 3 4 5

l. Are there any other things that present a problem for you incorporating energy efficiency options in your designs:
_____

These are my last questions.

38. Have you heard of an organization that promotes energy efficiency statewide in Vermont?
Yes
No
DK

a. If yes. What is the name of the organization?

If they mention Efficiency Vermont, Vermont Efficiency, or EVT skip to 39

If they mention anything else ask 38b

b. Have you heard of Efficiency Vermont, Vermont Efficiency, EVT, or the Efficiency Utility?
Yes
No
DK

==> If No or DK to 38b, thank and terminate

39. Have you ever contacted or been contacted by Efficiency Vermont or the Burlington Electric Department?
Yes
No
DK

==>If Yes,

a. Did you contact them or did they contact you?
I contacted them
They contacted me
Both

40. Have you conducted any projects with Efficiency Vermont or Burlington Electric Department's assistance?
Yes
No
DK

==>If Yes, ask:

a Did any clients request this?
Yes
No

b. How many of projects used EVT or BED assistance? _____

41. Have you used any of EVT's services in the past year?
Yes
No (Skip to 43)
DK (Skip to 43)

a. Which of these services have you used?

1. Project assistance
Yes
No
DK

ii. Rebate
Yes
No
DK

iii. Attended conference in February
Yes
No
DK

42. On a scale of one to five where one is not at all satisfied and 5 is very satisfied, How satisfied were you with.

a.	EVT's Knowledge of energy efficiency solutions	1	2	3	4	5
b.	EVT's Responsiveness to our project needs	1	2	3	4	5
c.	The Usefulness of information provided by EVT	1	2	3	4	5
d.	The Quality of services provided by EVT	1	2	3	4	5

e. For any respondent with one or more responses = 1 or 2, ask: Could you please describe what was unsatisfactory about EVT?

f. Do you think that your experience with EVT will lead to your including more, the same, or less energy efficiency solutions in future projects
More
The same
Less
DK

43. Would you say you are very likely, somewhat likely or not at all likely to use EVT or BED assistance on a project in the future
Very likely
Somewhat likely
Not at all likely
DK

=➔If not at all likely or somewhat likely, a. why do you say that?

Thank you for your time.

APPENDIX D

Sampling Plans

Appendix D

GDS Associates, Inc.
Engineers and Consultants
and
Research Into Action, Inc./Megdal & Associates

SITE VISIT SAMPLING PLAN

DRAFT

Prepared: January 31, 2002

Appendix D

1 - INTRODUCTION

Sampling plans are being developed for the commercial/industrial baseline and market characterization research being undertaken by the GDS Associates, Inc. team in Vermont. In total, three separate sampling groups have been identified. This is the third of the three sampling plans. The first sampling plan is for the mid-stream market actor group. The second plan addresses telephone surveys of end-use customers in new construction, renovation and remodeling, and existing buildings (with and without recent market participation for new energy equipment or features). This third sampling plan is for the site visit component of our research.

The sampling plans have been broken down into these three groupings in order to aid in quickly reviewing, editing, and initiating the work. In this way, the market actor interviews are currently being conducted and the end-user samples are being cleaned and checked as this plan is being reviewed. This approach for the sampling plans has contributed to keeping the project continually moving towards accomplishing its tasks.

The sampling plans for market actors and end-use customers had to take into account that there are two separate and distinct purposes of sampling databases that influence their selection. These are: (1) using databases as input itself into an understanding of the market (*i.e.*, provide market characterization information); and (2) providing the sampling base with the necessary information for sampling (as in the sampling plan), and conducting the research (*i.e.*, initial contact information).

Though a market characterization is not the primary focus, it is one of the multiple goals desired of this research project. The market actor sampling process and the end-use sampling and telephone surveys are major contributors to this area of research. Sampling for the market actors includes collecting the information available as a sampling frame is obtained that contains all of these market actors, enabling an estimate of the size of each market actor population and some of their basic parameters. Similarly, obtaining the information on new construction, remodeling and renovation to sample this group of end-users allows a basic description of the level of these activities in Vermont. The larger size of the end-user telephone survey compared to the planned size of the site visit research also allows the survey to be the best base for market characterization research.

The site visits in this project, however, can offer detail and professional input that can only be gathered on-site. This will be used in conjunction with the other two research components to help provide further understanding and more detailed

interpretation of what the research is finding. Site visits are also more costly to conduct than telephone surveys. So the Work Plan provided much fewer site visits than telephone surveys. This also helps define the site visits as part of a supporting and complimentary role to the survey/interview process.

This sampling plan for the site visits has been developed based upon:

- Initial work plan and its discussions;
- GDS Associates' relevant document review;
- Significant cleanup work of the available Department of Labor and Industry (DL&I) permit database by Katheryn Parlin of West Hill Energy and Computing;
- Researchable questions work performed by Dr. Jane Peters with Scott Albert of the GDS Team, Randal Lloyd with the DPS, and reviewers Dr. Ralph Prahl, Dr. Marty Kushler, Phil Mosenthal, and others;
- Discussions with evaluation team members (Ron Slosberg of SAIC, Dr. Jane Peters, and Scott Albert);
- Prior GDS Team experience; and
- Limits due to small size of commercial/industrial new construction market, and relatively small sample size and budget limitations.

2 – ISSUES AND METHODOLOGY FOR SAMPLING

Market Events

The market characterization/baseline study being undertaken for the commercial and industrial markets in Vermont will examine the major market events[1] for the C/I markets. These are:

- New construction (Act250 and non Act250);
- Remodeling, and major renovations; and
- Retrofit and equipment replacement.

A random sample of end-use customers would find only a few in new construction or properties that were recently remodeled or with major renovations. Given this, basing the sampling design on those that recently participated in these market events is important. But databases for these market events are few and often

[1] Market events are the defining elements within markets that present the bringing together of willing buyers and sellers of energy products and services. The market actors involved and the nature of the transaction relationships can be significantly different for these market events. As such, they are an important way in which to view the various commercial/industrial energy-using product markets.

incomplete. This generally drives the sampling plan and the steps required in creating the sampling frames, and final survey samples.

Research Objectives and Implications for Site Visit Sampling

Though not exclusive, the primary research objectives for the site visits include:

- Examine and document current practices;
- Verify and calibrate responses from design professionals;
- Examine differences in practices between Act250 and non Act250 properties; and
- Assess missed opportunities.

One of the predominate features of these objectives is they tend to be focused upon the new construction market. Their applicability decreases significantly for renovations and remodeling, and even more so for the replacement market. This suggests an emphasis in the sampling plan on new construction, then secondarily to the renovation/remodeling market, and lastly to the replacement market.

3 – OVERALL SITE VISIT SAMPLE SIZE AND DISTRIBUTION BY MARKET EVENT

The original Work Plan suggested 32 site visits. During the early research stages of this project, there has been much discussion of increasing this sample size as much as might be feasible while considering budget implications. We are proposing an increase in the sample to 80 site visits.

With the ordered emphasis discussed above, we would suggest the distribution of site visits by market event as follows:

- New construction – 40
- Renovation/remodeling – 25
- Replacements - 15

The overall total of 80 and an emphasis on new construction causes the new construction site visit sample to be 40. As will be seen in the next section, this number works well with the new construction data available for sampling.

4 – NEW CONSTRUCTION

End-User Telephone Survey and Implications for New Construction Site Visit Sample

New construction requires building permits as part of public health and safety regulations. These permits form the basis of both public and private (such as Dodge reports) databases on new construction. The original permit data in Vermont is

housed with the Department of Labor and Industry (DL&I). The DL&I database includes all of these permits, to include the fact that lighting changes require electrical permits. Vermont DPS staff and West Hill Energy arranged for provision of this data and Ms. Katheryn Parlin of West Hill Energy has obtained a set of this data and cleaned and organized it for this project. It is this dataset that is being used for the end-user survey and, as such, the dataset and end-user sampling is described in much more detail in the End-User Sampling Plan.

The original analysis and permit database work looked at 21 building types. Most market characterization and survey work aggregates to just 4-5 building types to make the sampling plan and quotas more reasonable and affordable. Similarly, the 21 building type categories were aggregated into seven (7) categories within the End-User Sampling Plan. These seven categories are office and retail; institutional, public assembly, and health care; school; industrial; and other (including warehouses, hotels). The mapping of these categories is presented in Table 1.

Table 1. Mapping Market Description Building Types Into General Typology

General Building Typology	Market Description Building Type
Office	Office Mixed use
Retail	Food service Service Retail Grocery
Industrial	Industrial
Warehouse	Warehouse, Storage
Institution, health care, assembly	Health care Institution (non school) Public assembly
School	School (non-college)
Other	Hotel Utility (wastewater, pumping) Apartments Agriculture Animals Lodging Unknown

Counts of permit data for 1998 and 1999 by these six categories for new construction are provided in Table 2.

Table 2. Initial Exam of Number of New Construction Permits in 1998 and 1999

General Building Typology	New Construction
Office	75
Retail	129
Industrial	40
School	3
Warehouse	90
Institution, health care, assembly	73
Other	76
Telephone survey population	486

After examining the final size of this population the End-User Sampling Plan decided no screening or quota system would be employed. A 25% completion rate is greater than is normally achieved in a commercial and industrial telephone survey. With permit data, there will also be some dropout from buildings not yet built (projects delayed or canceled). As we would like at least 100 new construction end-user surveys, the full pool was designated as the end-user telephone survey sample.

The site visits will pay attention to the elements that would have been used for a more stratified sampling if the population size had been larger. These elements, though, will still be important to the data collection and analysis. These elements will also provide subgroups for analysis whenever the sample sizes justify such analysis.

The final sample size of 40 hopes to achieve several subgroups (analyzed across other subgroups) with sample sizes of 10-30. For example, we may be able to have 10 non Act250 buildings and 30 Act250 buildings within the site visit sample. An optimistic forecast with a 25% completion for the phone survey and one-in-three completion from phone survey to site visit would provide us with 11 retail site visits. This might be enough to use to draw broad conclusions for this sector as compared, on average, to the overall site visit sample (if any significant differences are found). We also could end up with half of the site visits in Chittenden County

and half throughout the rest of the state, allowing us to examine if there were systematic differences between the two.

It is unlikely that anyone would agree to a site visit but not a telephone survey (which involves a lower commitment level). This means that if all new construction owners were contacted for the telephone survey, those agreeing to a site visit would probably be a subset of those that would agree to a telephone survey. Rather than have calls being made and overlapping between the two research efforts (poor customer service and would lower acceptance rates for both efforts), we propose that the new construction site visits be a subsample of the new construction telephone surveys. This also ensures that the customer inconvenience is minimized, as the data collected in the telephone survey can be made available for the site visits. Then the site visits can verify on-site physical elements and already have customer demographic information.

Using the End-User Telephone Survey as Set-Up for the Site Visits and Offer of Site Visit Incentive

Using the full new construction population for the end-user telephone survey, we are hoping to obtain between 100 and 150 completed telephone surveys. We will make the last subsection of the telephone survey one that explains our next research step as conducting site visits, with an introduction to what the site visit will entail from them, any possible benefits they might get from the site visit, and the incentive being offered to express our appreciation for their assistance. This presentation will be worded as offering the incentive if they are selected for a site visit. We anticipate needing to select all those that are willing to participate in the site visit. But wording this for "if selected" will allow us to select if we get the unlikely situation that most of the telephone survey respondents agree to a site visit.

Incentives for site visits (as with market actor interviews) are used in some studies and not in others. It is not absolutely clear when this needs to occur. Vermont building owners may not need an incentive to be willing to participate in a site visit. At the same time, we may be faced with attempting to get 40 site visits from within a population of 100 that has already participated in a 20-minute telephone survey. Given this, we are suggesting that an incentive be offered.

One of the main difficulties of using incentives within commercial/industrial research projects are that the incentive often goes to the business rather than the employee who provides us their time. Businesses also often find processing the incentive in terms of how it is handled for accounting and tax purposes more trouble than it is worth. We propose the incentive, therefore, be instead designed as

a physical gift, rather than a financial incentive, to the employee providing us their time.

An example of this type of incentive might be tickets for a cruise on Lake Champlain, or a choice from discount coupons by a few different restaurants across Vermont, or other activity/event in Vermont.

Consider charitable donation, $50 Home Depot gift card, Mobil Gas card, Raffle for a Major Home Appliance……

5 – REMODELING AND RENOVATION

End-User Telephone Survey and Implications for New Construction Site Visit Sample

Similar to new construction, remodeling and renovation requires building permits and the end-user telephone survey also required detailed sample planning for this sample group. The End-User Sampling Plan presents a more comprehensive discussion concerning the process of deciding on the permit data and how it will be handled to derive the end-user samples.

The complete remodeling and renovation permit population for 1998 and 1999 is displayed in Table 3.

The goal for the renovation/remodeling site visits, as described in Section 2 above, is 25 completed. With 25 completes from an initial population of 368, we may be able to have a selection process here.

Nonetheless, the selection would probably still only be to eliminate a handful from those we request for site visits. Given this small number to exclude from site visits, we propose that the criteria for exclusion by a quick assessment from telephone survey data that the likelihood of an energy impact is a small one. Some of the addition, renovation, and remodeling permits could be for very small changes with little to no energy implications. These are the ones that would appear to offer low cost-effectiveness for site visits. (If the number of these types of projects is somewhat greater, we may seek to do fewer site visits for this group and more in the replacement group, or just fewer overall site visits if the information potentially gained is far too small for the additional cost.)

Table 3. Initial Exam of Number of New Construction Permits in 1998 and 1999

General Building Typology	Addition, Renovation, and Remodeling
Office	38
Retail	103
Industrial	59
School	21
Warehouse	29
Institution, health care, assembly	84
Other	34
Telephone survey population	368

The same telephone survey process, set-up, and offering of incentive are proposed for the renovation and remodeling population as was discussed above for the new construction population.

6 – REPLACEMENT SITE VISITS

End-User Telephone Survey and Implications Replacement Site Visits

As discussed in the End-User Sampling Plan, the only way this project can identify businesses that had equipment replacement is from the telephone survey. In fact, the telephone survey will be using a screening process to obtain a minimum number of business decision-makers that are recent market participants.

This screening will be to find decision-makers for end-user firms that are in C/I properties (not home-based or only physically located outside of Vermont) that have purchased, contracted for, or looked at purchasing any of the following in the last two years:

- Lighting systems;
- Lighting or heating/air-conditioning controls;
- Window change-out;
- Changes in building envelope, roof, or insulation levels;
- Heating or cooling equipment;
- Major remodeling or renovations;
- Motors or variable speed drives;
- Air compressors;

- Ventilation systems;
- Refrigeration systems; or
- Other major electrical equipment (such as pumps, snow-making, industrial equipment).

The existing building sampling within the End-User Sampling Plan provided a quota system as displayed in Table 4. This is expected to provide an overall sample of existing building surveys of approximately 230.

Table 4. Existing Building End-User Sampling Plan and Quotas

SCREEN/ PARAMETER	GROUPS/VERMONT POPULATION		MINIMUM QUOTA
Within C/I Property in Vermont			
Tenant			30
Business Type of Special Interest	Shopping Centers & Malls	12	4
	Real estate mng	98	10
	Office bldgs	24	8
	School Districts	TBD	8
Random sample of businesses (excluding real estate developers) Find decision-maker contact			
General C/I end-user decision-maker, not recent market participant			30
Recent Market Participant	Lighting		75
	Non-lighting		75
Geography	Chittenden		50
	Other urban		30
	Rural		30

Meaningful site visits within this existing building survey are only those that are both recent market participants and those that actually took actions (purchasing and installing replacement equipment or building envelope changes). The minimum number of recent market participants from Table 4 shows a quota of 150. Some of these may have been a non-purchasing recent market participant (i.e., shopped for new equipment but has not made a decision to purchase or decided not to purchase). These provide little opportunity for gaining information by site visits. Therefore, we propose that the replacement site visits be a subsample of the businesses identified by the telephone survey as purchasers. We would expect this to be approximately 100 completed surveys.

With potentially 100 completed surveys and a goal of 15 site visits for the replacement market, we may have the opportunity to actually employ a serious selection effort in this market. We propose the selection criteria be used to ensure a representation across end-uses and include those with the largest potential energy impacts.

GDS Associates, Inc.
Engineers and Consultants
and
Research Into Action, Inc./Megdal & Associates

END-USER SAMPLING PLAN

FINAL

Prepared: November 24, 2001

1 - INTRODUCTION

Sampling plans are being developed for the commercial/industrial baseline and market characterization research being undertaken by the GDS Associates, Inc. team in Vermont. In total, three separate sampling groups have been identified. This is the second of the three sampling plans. The first sampling plan is for the mid-stream market actor group. This second plan addresses end-use customers. The third sampling plan will be for the site visit component of our research, to be undertaken after initial research helps to refine the goals of the site visit component.

The sampling plans have been broken down into these three groupings in order to aid in quickly reviewing, editing, and initiating the work. In this way, the sample preparation for the market actors can be underway while the sampling plan for customers is still being reviewed. This will contribute to keeping the project continually moving towards its necessary accomplishments.

There are two separate and distinct purposes of sampling databases that influence their selection. These are: (1) using databases as input itself into an understanding of the market (*i.e.*, provide market characterization information); and (2) providing the sampling base with the necessary information for sampling (as in the sampling plan), and conducting the research (*i.e.*, initial contact information).

Some databases may be appropriate for input to the market characterization but not provide the necessary contact information or unbiased sampling frame necessary for the sample. Similarly, some databases may offer great spread for sampling but offer little additional information. These distinctions have been recognized and used in the construction of each of the sampling plans.

This sampling plan for end-use customers has been developed based upon:

- Kick-off meeting discussions;
- Initial work plan and its discussions;
- GDS Associates' relevant document review (sampling plans contained in these projects);
- Significant review work of the available Department of Labor and Industry (DL&I) permit database, and the ACT250 database by Katheryn Parlin of West Hill Energy and Computing, discussions concerning this effort and the principles of data review versus sampling;
- Discussions with evaluation team members (among GDS team, Katheryn Parlin of West Hill Energy and Computing, and Randall Lloyd at DPS, to include his

investigation with construction field personnel concerning average time between permit to building completion);
- Prior GDS team experience;
- Review of data fields available in the DL&I permit database; and
- Obtaining counts and costs for Vermont businesses from commercially available lists.

2 – ISSUES AND METHODOLOGY FOR SAMPLING

Market Events and Usage of the Sampling Plan
The market characterization/baseline study being undertaken for the commercial and industrial markets in Vermont will examine the major market events[1] for the C/I markets. These are:
- New construction (Act250 and non Act250);
- Remodeling, and major renovations; and
- Retrofit and equipment replacement.

A random sample of end-use customers would find only a few in new construction or properties that were recently remodeled or with major renovations. Given this, basing the sampling design on those that recently participated in these market events is important. But databases for these market events are few and often incomplete. This generally drives the sampling plan and the steps required in creating the sampling frames, and final survey samples. This sampling plan, therefore, is presented by these market events, and then other characteristics that we may strive to obtain specified stratified sampling quantities.

3 – NEW CONSTRUCTION, RENOVATION, AND REMODELING

New construction and major construction work (such as renovations and remodeling in the nature of gut-rehab) require building permits as part of public health and safety regulations. These permits form the basis of both public and private (such as Dodge reports) databases on new construction. The original permit data in Vermont is housed with the Department of Labor and Industry (DL&I). The DL&I database includes all of these permits, to include the fact that lighting changes require

[1] Market events are the defining elements within markets that present the bringing together of willing buyers and sellers of energy products and services. The market actors involved and the nature of the transaction relationships can be significantly different for these market events. As such, they are an important way in which to view the various commercial/industrial energy-using product markets.

electrical permits. Vermont DPS staff and West Hill Energy have arranged for provision of this data and Ms. Katheryn Parlin of West Hill Energy has obtained a set of this data and begun assessment of this dataset for this project.

An alternative regulatory function dataset is the one maintained as part of Act250 compliance monitoring and management. This dataset has more detailed information concerning these projects, particularly in the area of equipment included and energy usage. Given its purpose, however, it is not inclusive of all new construction, remodeling, or renovation projects.

An important element requested in the market characterization and baseline study includes non-Act250 buildings. Many commercial new construction energy efficiency market studies also use databases derived from permit data as the basis for their sampling activities.[2] The permit database being more inclusive has been selected as the primary database for this study. However, it is recognized that analysis of the Act250 database might be of interest for further evaluation of the Act250 process and effects, as an additional effort to supplement these developing market studies.

The sampling frame for baseline studies is generally used for two purposes.
1. Providing the pool from which the study sample is drawn; and
2. Analysis of counts and characteristics as partial descriptors of the market (*i.e.*, input into the market characterization).

The DL&I permit database is proposed as the primary basis for both of these purposes for new construction, and remodeling and renovations. The database is not designed, however, with these purposes in mind. Significant work will need to be undertaken in order to make the information useful for these two purposes. The development of this sampling plan is being used as a source of developing agreement on this effort with Ms. Parlin as the primary analyst, and advise and assistance being provided by the GDS evaluation team (with lead for this area being provided by Dr. Megdal). The description of the effort within this Sampling Plan, as finalized, will guide this work and detail the information to be obtained.

DL&I Database Work Towards Market Description Information

The first step is obtaining the DL&I Database extracts for the two market event categories: new construction, and renovation/remodeling. Inquiry was made by Mr.

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[2] The other alternative used for deriving the sample of new commercial buildings can come from utility new connections. These lists, however, often need a great deal of effort to ensure the lists are for new construction and not just new meters (replacing old meters, faulty meters, or changes in building configuration).

Randal Lloyd of field construction experts as to how long on average projects generally take from permit to construction in Vermont. We were told that 95 percent of projects are complete within two years. This study desires completed projects and we recommend obtaining permit data from 1998 and 1999 for the study period (with completions expected to have occurred in 1999, 2000, and 2001). These are also clear-cut annual time periods that will easily allow a one-year follow-up comparison study to use the 2000 permits. Ms. Parlin also pulled 1997 data at the same time. The sampling work can then be ready to add 1997 data if too many projects are found to still not be complete during the survey process of 1998 and 1999 permits.

The EVT commercial program and the commercial Act250 energy review process include multi-family buildings of three (3) or more stories. The permit database does not easily identify the number of stories. There is a field that has been created by West Hill Energy and Computing that provides a very general building type description. From this field, we can delete the residential single-family attached properties (townhouses and duplexes). The categories of lodging (non-hotel) and residential apartments will be kept as possibly being within the commercial programs of interest. (The lodging category largely consists of dorms, senior living facilities, and other non-hotel lodging properties.) Other related categories within the commercial establishments include hotels, mixed use, nursing homes within health care, and institutional buildings that include prisons.

There are a significant number of building permits that are taken out for projects, which are not of real interest to this study. Removing these is the next culling step for each of the two datasets. These are very small projects with little to no energy impacts. They can be identified based upon very small square footage and by project name. These include permits for: small utility sheds/buildings, carports, toilets, decks/porches/roof extensions, warming huts, sheds (salt/sand, small metal), event tents, and other miscellaneous such as sprinkler systems. There are many records with either no square footage recorded or it is recorded as zero. This means that after sorting the records by square footage, this culling must take place by hand, deleting only the records where the project names are as in the list above. Each record will be examined for this culling for all those records with less than 1,000 square feet.

The remaining new construction dataset and renovation/remodeling datasets will be the ones used for the market description and as the basis for the sampling. The next step for each dataset will be completed by working with each individual remaining record. The broad building type descriptors are not as detailed as desired for the market description. Nevertheless, the firm name and project name fields provide

more detail that can often allow assignment into more specific building types. Since the basic categorized is already being done by hand and the analysis of this is not a lot more expensive for more detail, we have decided to include many categories during this stage. The building typology will be as follows:

- Office
- Food service: restaurants, fast food
- Service, non-food
- Retail, non-grocery
- Grocery stores, convenience stores
- Agriculture: e.g., greenhouses
- Animals: e.g., horse or dairy barns
- Health care: inpatient, outpatient, nursing homes
- Hotels
- Institution (except non-college schools): colleges, prisons, military installations
- Schools
- Public Assembly: religious, meeting, day-care, theatre, health club
- Lodging: dorms, camps, assisted living
- Residential apartments
- Industrial
- Storage: self storage buildings
- Warehouse
- Utility: utility sheds (not to be included in end-user sample), utility-government (which is often wastewater treatment will be included in end-user sample)
- Mixed Use
- Other, misc. (Dropped from market/building analysis): toilet pavilion, lift shed, shower stall, carport, salt shed.
- Temporary (Dropped from market/building analysis): temporary buildings including tents, temporary trailer locations.

The permit database also has a field for city/county. This level of detail is more than the population size can justify for stratified sampling or that can be asked of market actors in surveys. So an aggregate geographic field will be created that can also be used in the surveys for comparisons. The proposed geographic breakdown is for all locations to be classified into one of three areas:

1. Chittenden (Burlington Electric Department and different code activities);
2. Other urban areas (city cited in database rather than county); and
3. Rural areas (all not listed above).

Counts of projects, average square footage, counts in square footage ranges, by building type, by permit year (1998, 1999), and by the three geographic area designators will be developed. This will provide a first glance of the market. This

data will be examined alongside the survey results, and survey screening results for developing the market characterization. (The market description provided by assessing permit data must be adjusted for estimated completion rates, as not all projects permitted are actually built. This information will be obtained by logging the survey screening information that will verify building completion prior to conducting the survey.)

Survey Screens: Ownership Type and Non-Act250 Projects

Discussions concerning the important decision parameters that may differ between types of customers have shown that the study is most interested in general building types, ownership types (such as, owner occupied, leased space, and multi-location headquarters controlled), projects that are Act250 versus those that are not, and some form of geography. The building permit data will provide the building type information, and the geography information (as discussed above).

Some ownership types are more common in certain building types (e.g., institutional is generally owner-occupied); otherwise ownership type must be obtained through the telephone survey process. The simplest method then for ownership type is through an early telephone survey question. This is what will be employed. Then it can be used as a screen if there is specific ownership types that are desired and not showing up in the random sample.

There is an Act250 database. Yet, this database is held in WordPerfect and would be difficult to match to the permit data. It could probably only be done by hand on a record-by-record look-up basis. It is estimated that 50-75% of the new construction square footage may be Act250. However, the larger projects are Act250. So there could be 50% of the newly constructed buildings that are Act250 and half that are not. In which case, reasonable numbers of both should occur from a random sample. To gather this information, and to use as a screen if necessary, an early telephone survey question will ask whether their new building had to comply with Act250. (Discussion with DPS indicated that customers would know this, therefore it would be the simplest and least cost way of adding this information to the survey record.)

From Market Description Database Effort to Sampling

Telephone surveys for commercial/industrial customers often need to have samples drawn that are at least 4-5 times the size of the desired final sample count. Before the data description is complete, it can not be determined which categories will be census attempts (i.e., no random sampling within this strata) and which will be sampled. It is quite likely that most will be census attempts given the overall expected size of the population of new construction projects (after the above clean-up), and renovation/remodeling projects.

There are several parameters of interest that permitted projects can fall within multiple categories. These parameters are:

- General building type;
- Ownership type;
- Geography (aggregated into the three categories described above);
- Act250 versus non-Act250; and
- New construction, remodeling/renovation.

The original analysis and permit database work looked at 21 building types. Most market characterization and survey work aggregates to just 4-5 building types to make the sampling plan and quotas more reasonable and affordable. Similarly, the 21 building type categories will be aggregated into seven (7) categories for the sampling effort. These seven categories are office and retail; institutional, public assembly, and health care; school; industrial; and other (including warehouses, hotels). The mapping of these categories is presented in Table 1.

Even aggregating building types, there are five parameters of interest. This means that a stratified random sampling that crossed all of these parameters would be quite large. The most cost-effective sampling is to establish quotas for each of the parameters of interest. Then analysis would be across other parameters and just on one interest area at a time. For example, differences by ownership type could be examined by looking at ownership type across building types, geography, Act250 or non-Act250, and new construction or renovation/remodeling. Similarly, other parameters could be examined. This methodology would require the survey firm to check off the appropriate categories as each survey is completed. This log would be used to see what screens might need to be used during the latter surveys to finish up desired quota counts. Also, each of these parameters must be in the sample recruitment pool or within an initial list of survey screening questions.

Table 1. Mapping Market Description Building Types Into General Typology

General Building Typology	Market Description Building Type
Office	Office Mixed use
Retail	Food service Service Retail Grocery
Industrial	Industrial
Warehouse	Warehouse, Storage
Institution, health care, assembly	Health care Institution (non school) Public assembly
School	School (non-college)
Other	Hotel Utility (wastewater, pumping) Apartments Agriculture Animals Lodging Unknown

* Temporary and single family attached removed from dataset.

Counts of permit data for 1998 and 1999 by these six categories for new construction, and remodeling/renovation (and additions) are provided in Table 2.

Table 2. Initial Exam of Number of Permits in 1998 and 1999 by Type

General Building Typology	New Construction	Addition, Renovation, and Remodeling
Office	75	38
Retail	129	103
Industrial	40	59
School	3	21
Warehouse	128 (90)	30 (29)
Institution, health care, assembly	73	84
Other	118 (76)	42 (34)
Telephone survey population	416	368

(Y) population in telephone survey population. Permits for storage, other/misc., and non-government utility have been deleted, as discussed above.

After examining the telephone survey population figures of 416 for new construction and 368 for renovation/remodeling, no screening or quota system will be employed. A 25% completion rate is greater than is normally achieved in a commercial and industrial telephone survey. As we would like at least 100 for each, new construction and renovation/remodeling, a census attempt will be made from the final commercial/industrial permit database.

There is still a significant effort required to take this dataset and prepare it for telephone sampling. The permit database contains a field for site address, owner, and contact telephone number. However, these may be blank, may contain the builder's information, or just site information rather than a complete address. Every record will need to be examined for where current firm name and phone number can be provided. A list of the records for which this information can not be found will be developed for firm name and phone number based upon street address look-up. This will need to be performed by a subcontracting firm hired specifically for this purpose. After all of these clean-up and preparation steps, the survey recruitment database will be established for the end-user new construction, and renovation/remodeling surveys.

4 – EXISTING COMMERCIAL, INDUSTRIAL, AND GOVERNMENTAL END-USERS

General lists of commercial, industrial, and governmental customers are used to survey occupants of existing C/I buildings. These could be from utility lists of customers or general business listings. In this statewide study, a general listing is the easiest to obtain and use.

Two commercially available list sources have been examined. These are American Business Lists (also referred to as InfoUSA), and GENESYS Sampling Systems. It was discovered that GENESYS uses the databases from InfoUSA and from Dun and Bradstreet (D&B). Information was obtained from GENESYS that allowed a comparison to be made between the lists provided by InfoUSA and D&B.

Differences between sources could include how thorough they are in obtaining all firms that work in an area, the type of data available, and the way in which firms are categorized by industry. InfoUSA has been used in the past by team members and found to be fairly easy to work with, reliable, and of less cost than other sources. D&B databases have access to significantly more financial data, but at a significantly greater cost. The InfoUSA dataset has all the necessary information typically used for the surveying and characterization functions and costs more than one-third less than D&B.

Business counts and costs for obtaining data for both InfoUSA and D&B datasets were investigated with GENESYS. Generally, the D&B dataset had more firms showing 35,707 firms in Vermont while the InfoUSA dataset lists 32,262. But the differences by industry are not uniform and it is likely that the InfoUSA dataset probably contains almost all of the full-time operational firms. Given the cost differential, the InfoUSA dataset will generally be the commercially available list considered. This differential is made greater in that matching more detailed industry classification to our needs is more easily accomplished with the InfoUSA dataset.

Purchasing the InfoUSA list directly from them is also less expensive than through the sampling firm GENESYS, as would be expected.

Business Type of Interest

One method would be to purchase a completely random sample of business, government entities. But there may be specific business types that have greater influence on more buildings and the market as a whole, or of specific interest for the EVT programs. A completely random sample of businesses would obtain very few of these businesses. An over sample of these businesses could be of interest. Given

this, the sampling plan for existing businesses is a combination of stratification for a few specific businesses of interest and an overall random sample.

One of these is real estate developers (InfoUSA SIC 655202), but these will be interviewed as part of the market actor pool and should be deleted for these end-user surveys (in order not to restrict our ability to reach our completion goals in the market actor surveys). There are four others, however, that could receive special attention: shopping centers and malls (management of shopping malls, centers, and retail strip malls, InfoUSA SIC 651201); real estate management (InfoUSA SIC 653108); office building management (InfoUSA SIC 651202); and schools (lists from State of Vermont). The sampling plan proposes over sampling these four categories.

Survey Screens: C/I Building Occupant, Ownership Type, Recent Market Participant, and Geography

Some of those on a general business list will include very small businesses that may not be in commercial/industrial properties, e.g., a home-based business. One of the first survey screens should eliminate these customers from the C/I research effort.

Tenants often will not have authority for energy efficiency equipment change-out decisions. Yet, it may be useful to survey tenants with a smaller set of questions concerning factors important to their lease decision (involving energy bill considerations, lighting quality, comfort criteria, etc.). This could also include questions relating to design-build, prevalence and extent of tenant fit-outs, frequency of remodeling, and process and attitudes towards energy efficiency.

A small quota for tenant end-users is recommended. This should probably be the second survey-screening question and used for the survey skip pattern.

We have considered two possible approaches for surveying most end-users. One possible sampling method is to survey a completely random sample of businesses in Vermont. This could obtain feedback on the general thoughts concerning energy efficiency from business decision-makers. This could provide an overview of all commercial and industrial customers, their general decision-making behavior, and knowledge/use of energy efficiency principles for decision-making.

Another alternative approach is for the sample to be of recent market participants. These are the decision-makers that either have recently purchased or shopped for the equipment of interest (i.e., lighting when examining the lighting market, or motors for an examination of the motor market).

This second approach looks more specifically at what decision-makers think and see as they are in the current market. For example, if a decision-maker does not know about high efficiency equipment before he/she starts searching is not as critical as what happens while in the market. If he/she immediately discovers this information as they begin looking at information, discussing it with colleagues and market actors, and then it becomes a part of their decision-making criteria as they actually comparison shop, that is important. Some equipment/environment decisions may be examined only once in twenty years (e.g., heating equipment in a small owner-occupied business). The general opinions of all end-users may not measure the market as it is actually operating, which is best obtained by surveying those that have been in the market, having obtained new equipment recently, or having looked at obtaining equipment for near future. Those actually in the market (participating in the decision process) can also provide better information as to how these decisions are actually being made. Because of this, most energy efficiency market baseline and progress studies are performed with customers that are market participants.

Who are these market participants? First, let us strictly define the differences between these two events: equipment replacement, and retrofit. Often the two are used interchangeably. An equipment replacement involves a decision that looks at replacing a specific set of equipment due to the prior equipment either failing, its being anticipated to fail in the near future, or it not meeting the current or anticipated need (obsolescence). A strict definition of retrofit is where equipment (and other building environment properties, e.g. lighting) is working properly and the space is retrofitted (equipment replaced or building controls added) as part of decision to upgrade (for saving energy, better work environment, lower maintenance costs, etc.). Though of interest for long-run market transformation, very few of these are expected to currently occur.

Obtaining lists of customers that have participated in either of these events are extremely difficult, if not impossible, to obtain. Some lists could be gathered from market actors. For example, HVAC contractors might have lists of customers that have recently bought new HVAC equipment. These lists are difficult to obtain (often not computerized and, for example, HVAC contractors often worry about providing a list of who their customers are and their purchase habits/requirements). Prior work has examined purchasing these lists from market actors, or paying to have someone sample from their files. Besides the degree of difficulty this involves, it would be difficult to ensure that the ultimate consolidation of lists for the sampling frame was not a biased list, and the degree of bias would be difficult to estimate.

Due to this, the method generally employed in the energy efficiency field is to use screening questions within the survey and set quotas for achieving these populations. This often means a very significant screening rate (greatly increasing the per complete survey cost).

This End-User Sampling plan assumes a mid-ground with some general survey information and small groups of screening overall and for some equipment. This mid-ground approach was discussed in the draft of this document and agreed by all parties to be most reasonable for this project.

For the screening by market, the next decision points are then what quotas are desired for the various types of equipment replacement. Retrofits are a very small part of the market, even within the equipment replacement market. In fact, they may be almost non-existent. Given this, retrofits will only be examined as they may happen to show up in the survey as it screens for equipment replacement and retrofits (added equipment/features), as is often done in this field.

It is proposed that the screening for recent market participants be the decision-makers for end-user firms that are in C/I properties (not home-based or only physically located outside of Vermont) that have either purchased, contracted for, or looked at purchasing any of the following in the last two years:

- Lighting systems;
- Lighting or heating/air-conditioning controls;
- Window change-out;
- Changes in building envelope, roof, or insulation levels;
- Heating or cooling equipment;
- Major remodeling or renovations;
- Motors or variable speed drives;
- Air compressors;
- Ventilation systems;
- Refrigeration systems; or
- Other major electrical equipment (such as pumps, snow-making, industrial equipment).

Quotas could be considered for any of these markets. At the same time, the number of them would be small and could greatly increase the cost in obtaining the commercially available list and the survey costs in performing the screening, and greater numbers of surveys. A simple mid-ground here has also been decided upon. Lighting system changes are by far the most common and could easily encompass the entire quota for recent market participants. To avoid this, and at the same time

not drastically increase survey costs by having quotas for all equipment types, there will be a separate quota for lighting and non-lighting recent market participants. The sampling plan for existing buildings could also be stratified by SIC codes as they map to probable building types. At the same time, the existing building survey is expected to be a smaller survey for this study and the importance is on the market participant screen (which will eliminate a large number of end-users). Given this, further stratification is not proposed for this survey population.

The zip code of the business will be used in the sample list to develop an identifier for which of the three geography areas the business is primarily located within. This can then be used in the recruitment process to attempt to reach survey quotas.

The existing building end-user sampling is summarized in Table 3. This would result in an overall sample of existing building surveys of approximately 230.

Table 3. Existing Building End-User Sampling Plan and Quotas

SCREEN/ PARAMETER	GROUPS/ VERMONT POPULATION		MINIMUM QUOTA
Within C/I Property in Vermont			
Tenant			30
Business Type of Special Interest	Shopping Centers & Malls	12	4
	Real estate mng	98	10
	Office bldgs	24	8
	School Districts	TBD	8
Random sample of businesses (excluding real estate developers) Find decision-maker contact			
General C/I end-user decision-maker, not recent market participant			30
Recent Market Participant	Lighting		75
	Non-lighting		75
Geography	Chittenden		50
	Other urban		30
	Rural		30

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MARKET ACTOR SAMPLING PLAN

FINAL

Prepared: October 19, 2001

1 - INTRODUCTION

Sampling plans are being developed for the commercial/industrial baseline and market characterization research being undertaken by the GDS Associates, Inc. team in Vermont. In total, three separate sampling groups have been identified. This first sampling plan is for the mid-stream market actor group. A second plan (the draft of which was also distributed today) addresses end-use customers. The third sampling plan will be for the site visit component of our research (to be undertaken after initial research helps to refine the goals of the site visit component).

The sampling plans have been broken down into these three groupings in order to aid in quickly reviewing, editing, and initiating the work. In this way, the sample preparation for the market actors can be underway while the sampling plan for customers is still being reviewed. This will contribute to keeping the project continually moving towards its necessary accomplishments.

There are two separate and distinct purposes of sampling databases that influence their selection. These are: (1) using databases as input itself into an understanding of the market (*i.e.*, provide market characterization information); and (2) providing the sampling base with the necessary information for sampling (as in the sampling plan), and conducting the research (*i.e.*, initial contact information).

Some databases may be appropriate for input to the market characterization but not provide the necessary contact information or unbiased sampling frame necessary for the sample. Similarly, some databases may offer great spread for sampling but offer little additional information. These distinctions have been recognized and used in the construction of each of the sampling plans.

This sampling plan for mid-stream market actors has been developed based upon:

- Kick-off meeting discussions;
- Initial work plan and its discussions;
- GDS Associates' relevant document review (sampling plans contained in these projects);
- Initial interviews with key market actors and Efficiency Vermont (EVT, the efficiency utility established in Vermont to conduct the systems-benefit charge sponsored energy efficiency programs) and Burlington Electric Department (BED) program staff (September 14, 2001);
- Discussions with evaluation team members (among GDS team, Katheryn Parlin of West Hill Energy and Computing, Randall Lloyd at DPS, and staff at EVT);
- Prior GDS team experience;

- Input from evaluation team reviewers, and advisors; and
- Obtaining counts and costs of relevant lists that might be useful for the sampling.

2 – ISSUES AND METHODOLOGY FOR SAMPLING

Market Events and Usage of the Sampling Plan

The market characterization/baseline study being undertaken for the commercial and industrial markets in Vermont will examine the major market events[1] for the C/I markets. These are:

- New construction;
- Remodeling, and major renovations;
- Retrofit; and
- Equipment replacement.

These four market events can be consolidated into three areas that significantly differentiate the market actors' involvement. These are seen by combining the retrofit market and equipment replacement. For example, architects are most likely involved in the new construction market and the remodeling and major renovation activities, but not in the retrofit or equipment replacement activities. HVAC contractors will likely be involved in all three areas but probably play very different roles across these (*i.e.*, more likely playing a lead role in equipment replacement and a lesser role within new construction).

All the mid-stream market actor categories being considered generally are involved in more than one market event. This means the sampling plan and activity will be based upon each mid-stream market actor to be examined rather than the market event. Then recognizing which market events a market actor type is involved in will determine which survey instruments (if developed by market event), or segments of the instruments, are applicable to the different market actors.

Obtaining Sampling Frames

The most common source for the sampling frames of market actors for baseline and market characterization work is commercially available lists. A second possibility is

[1] Market events are the defining elements within markets that present the bringing together of willing buyers and sellers of energy products and services. The market actors involved and the nature of the transaction relationships can be significantly different for these market events. As such, they are an important way in which to view the various commercial/industrial energy-using product markets.

the lists of market actors available from the program implementer, EVT, (*i.e.*, those that EVT has gathered for use in program marketing and/or implementation).

The sampling frame for baseline studies is generally used for two purposes.
1. Providing the pool from which the study sample is drawn; and
2. Analysis of counts and characteristics as partial descriptors of the market (*i.e.*, input into the market characterization).

The commercially available lists are often purchased in their entirety for specific sets of mid-stream market actors. This is because their limited numbers allow this to be cost-effective and the data is then available to provide descriptive statistics on these market actors. The commercial lists are also generally developed in the same way everywhere and across actors, so potential bias is limited. The most common method is to start with lists of firms from Yellow Page advertising or government filed documents and categorize the firms by standard industrial category. Then a process of telephone surveys to firms, or other data gathering, is used to complete specific information on the firms, such as contact information, number of employees, level of sales, etc. This allows these lists to be used to provide counts of the number of firms by general firm size for each market actor, along with their approximate level of sales, and contact information that can be used for classification (area code or zip code for location area) or surveying (name and phone number).

Two commercially available list sources have been examined. These are American Business Lists (also referred to as InfoUSA), and GENESYS Sampling Systems. It was discovered that GENESYS uses the databases from InfoUSA and from Dun and Bradstreet (D&B). Information was obtained from GENESYS that allowed a comparison to be made between the lists provided by InfoUSA and D&B.

Differences between sources could include how thorough they are in obtaining all firms that work in an area, the type of data available, and the way in which firms are categorized by industry. InfoUSA has been used in the past by team members and found to be fairly easy to work with, reliable, and of less cost than other sources. D&B databases have access to significantly more financial data, but at a significantly greater cost. The InfoUSA dataset has all the necessary information typically used for the surveying and characterization functions and costs more than one-third less than D&B.

Business counts and costs for obtaining data for both InfoUSA and D&B datasets were investigated with GENESYS. Generally, the D&B dataset had more firms showing 35,707 firms in Vermont while the InfoUSA dataset lists 32,262. But the

differences by industry are not uniform and it is likely that the InfoUSA dataset probably contains almost all of the full-time operational firms. Given the cost differential, the InfoUSA dataset will generally be the commercially available list considered. This differential is made greater in that matching more detailed industry classification to our needs is more easily accomplished with the InfoUSA dataset.

Purchasing the InfoUSA list directly from them is also less expensive than through the sampling firm GENESYS, as would be expected.

Alternatively, lists of individuals from specific professions could be obtained from trade organizations or licensing boards.

The advantages and disadvantages of these different sources will be examined and a recommendation made for this study by market actor within each of the sections.

3 – ARCHITECTS

The primary trade association list of architects comes from local chapters of the American Institute of Architects (AIA). There is an AIA Champlain Valley chapter, which EVT has a copy of its list of members. However, this does not cover the entire state of Vermont.

Architect and engineers are required in Vermont to maintain licensing. EVT does have some of these lists that have been used for promotional mailing concerning the training EVT has offered. It has been noted that architects from New York, in particular, do work in Vermont.[2] Given the requirement for licensing, these lists would offer the advantage of providing these individuals into the sampling frame.[3]

At the same time, these lists are for individuals. As such, no firm demographics would immediately be available for market descriptive statistics on all these market actors (including those not surveyed).

Another source list of architects and design engineers is from those that are listed in the permit data maintained by the Department of Labor and Industry (DL&I).

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2 Discussions with Randall Lloyd. Importance of out-of-state architects seen in *Initial Interviews with Key Market Actors and EVT and BED Program Staff*, by GDS Associates, Inc., pg. 8.

3 Ibid, pg. 3.

This provides a sample of the architects and design engineers that have recently been performing projects in Vermont. It is estimated, however, that only about half of the permits have information available in this field. Therefore, it is probably not a complete list and could, potentially, be a biased list.

A combined approach is proposed. A list of architect and building design firms (InfoUSA 8712-01 and 8712-2) will be purchased from InfoUSA. This contains a list of 139 firms. This is greater than the 75 architectural firms estimated from the Initial Market Actor Interviews.[4] Therefore, this list is expected to be comprehensive in its number of possible architectural firms.

A second step will be examining the InfoUSA database against the EVT list(s), and the DL&I list. These lists of architects active in Vermont, yet not necessarily an unbiased listing, will be used as a supplement to ensure the final sampling frame is the most comprehensive listing. For example, the architect lists from EVT will be used to identify architects in New York, New Hampshire, and elsewhere that are operating in Vermont. These will be added to the sampling frame.

The comprehensive dataset, supplemented by survey information, will then be used to produce the basic descriptive statistics for architects operating in Vermont.

The sampling frame will be stratified into large-and-medium sized architectural firms and small firms. (The Initial Interviews suggest that 60% of the architectural firms are small with five or less architects.) The sampling plan proposes conducting random sampling for 10 interviews with individuals from small architectural firms and 20 from large-to-medium firms.

The lists are from architectural firms in general. Many of these may only work with residential projects. A screening question will be asked in the survey to ascertain if the firm does commercial work and what proportion of their work is in the commercial and industrial sectors. (In the summary table at the end of this Sampling Plan, an optimistic 60% are assumed to work at least part-time in the commercial/industrial sector.)

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4 Ibid, pg. 8.

4 – HVAC AND MECHANICAL ENGINEERS

There are very few firms listed as HVAC engineering firms, or mechanical engineering firms in Vermont in the InfoUSA Database (8711-07 and 8711-25). There are 8 such firms. This will be expanded by any appropriate list provided by EVT. We will also work with EVT on obtaining and using the list of Vermont engineers that are ASHRAE members. It is quite possible that the Vermont mechanical engineers are within general contractor firms, architectural firms, or with HVAC contractors.

With the small current size of this population, a census attempt will probably be undertaken. If the list is expanded substantially with the supplement effort from EVT lists and ASHRAE member lists, then the sample size obtained will be 10.

5 – HVAC SUPPLIERS

The HVAC suppliers in the InfoUSA database number 12 firms in Vermont. HVAC suppliers will also be obtained for New Hampshire, and northeastern New York (within the 518 area code). It then becomes more important for these interviews to have an initial screening question for whether and how much business the firm does in Vermont.

The above list will be reviewed alongside EVT lists for possible expansion. The Work Plan suggests interviewing five (5) firms in this category. Given the difficulty in reaching these types of firms, the entire list will probably be used for recruitment.

The Work Plan stated their would not be interviewing of motor vendors as this work was already being done by NEEP, which we did not want to duplicate or have return calls to these individuals. A NEEP Cool Choice study has just been completed.[5] An outstanding question is whether this means we want to avoid interviewing the air-conditioning contractors and suppliers for this study, using the NEEP information instead. At the same time, the NEEP Cool Choice program will also be drawn upon to provide a list of HVAC suppliers working in Vermont for supplementing the InfoUSA list. We will talk to NEEP to obtain a copy of the relevant lists and discuss this issue with them.

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5 *Cool Choice Study Group - Northeast C&I HVAC Initiative Process Assessment*, January 15, 2001, PA Consulting Group. See document review and summary conducted by GDS Associates, Inc.

6 – MOTOR VENDORS AND SUPPLIERS

There are 13 motor suppliers and motor repair firms in the InfoUSA database. This list will also include wholesale electric motor control vendors in Vermont. Similar firms in New Hampshire and eastern New York (518 area code) will also be obtained. This list can be examined in light of information at EVT and the list of motor vendors in the NEEP motors study.

The Work Plan suggested that we not interview motor vendors as this work is being accomplished by NEEP. However, Variable Speed Drives (VSDs) are an important consideration for the EVT program effort. The NEEP study is not examining the market characteristics, barriers, or baseline/progress in the VSD market. This suggests that this study may want a smaller interview to motor vendors, suppliers, and electric motor control wholesalers to obtain this information for VSDs. We will further discuss these lists and issues with NEEP and the NEEP motors study manager, Mr. Mitch Rosenberg.

7 – LIGHTING SUPPLIERS

Lighting supply firms (5063-18 bulb & tubes, 5063-19 fixtures, 5063-28 controls, and 5063-68 lighting systems) number 20 in the InfoUSA database. This list will be expanded by also obtaining lighting supply firms located in New Hampshire and eastern New York (in the 518 area code). Again, these latter groups will need to be screened for firms that are supplying to Vermont. The Work Plan has a proposed sample of 15 of these. Therefore, depending on the size of the expanded list and the screening for Vermont business, the entire list may be the recruitment list for this sample.

8 – WINDOW SUPPLIERS

We will screen for business in Vermont from window suppliers from Vermont, New Hampshire, and eastern New York (area code 518). This list will be expanded by any relevant lists available from EVT. A total of five (5) interviews will be conducted with this group of market actors.

9 – ELECTRICAL ENGINEERS

We will screen Vermont electrical engineering businesses for whether they work in C/I buildings. We are looking for those that work in lighting system designs, HVAC systems, or other building related electrical engineering work (as opposed to transformers/power, or computer electronics). This list will be expanded by any relevant lists available from EVT. A total of five (5) interviews will be conducted with this group of market actors.

10 – GENERAL AND BUILDING CONTRACTORS

The InfoUSA database has 230 commercial building contractors (1542). The Work Plan proposed 5 interviews. Given the high number of firms here and the smaller numbers in the above groups, the Sampling Plan proposes a total of 30 interviews with 10 from small to medium firms and 20 from medium to large firms. (The selection of a larger number of medium to large firms is done based upon the supposition that many of the larger C/I projects are worked on by the larger contracting firms.)

Some of these may only work with residential projects. A screening question will be asked in the survey to ascertain if the firm does commercial work and what proportion of their work is in the commercial and industrial sectors. (In the summary table at the end of this Sampling Plan, 60% are assumed to work at least part-time in the commercial/industrial sector.)

11 – REAL ESTATE DEVELOPERS

The InfoUSA database has 54 real estate developers (6552-02). Some of these may only work with residential projects. A screening question will be asked in the survey to ascertain if the firm does commercial work and what proportion of their work is in the commercial and industrial sectors. (In the summary table at the end of this Sampling Plan, 60% are assumed to work at least part-time in the commercial/industrial sector.) This list will be supplemented by EVT lists and review.

We propose interviewing 5 real estate developers.

12 – HEATING AND COOLING CONTRACTORS

Heating and cooling contractors (1711-02, 1711-14, 1711-17, and 1711-29) for Vermont number 241 in the InfoUSA database.

The Initial Market Actor Interviews noted that many contractors move back and forth working both New Hampshire and Vermont.[6] The InfoUSA database can be obtained by industry category and for counties (rather than just whole states). This makes it relatively easy and low cost (given the small number of firms expected to be located in western New Hampshire) to add contractors in the western counties of New Hampshire to the sampling frame. This will be done for this group of market actors for the New Hampshire counties of: Coos, Grafton, Sullivan, and Cheshire.

The Work Plan proposed 25 interviews for this category. The Sampling Plan suggests that these consist of 10 small-to-medium firms, 10 medium-to-large firms, and 5 firms from New Hampshire.

Many of these may only work with residential projects. A screening question will be asked in the survey to ascertain if the firm does commercial work and what proportion of their work is in the commercial and industrial sectors. (In the summary table at the end of this Sampling Plan, an optimistic 60% are assumed to work at least part-time in the commercial/industrial sector.)

Quotas will also be used so the interviews will encompass three levels of cooling equipment. The quotas will be for businesses that do at least ¼ of their business in:

- Small HVAC units -- 5
- Medium-sized packaged units -- 5
- Large DX and chiller systems -- 5

13 – ELECTRICAL (LIGHTING) CONTRACTORS

The InfoUSA database lists 233 electrical contracting firms in Vermont. This will be expanded to include the four western counties of New Hampshire, as is being done for the HVAC contractors. The Sampling Plan proposes a similar sampling scheme as for HVAC contractors: 10 small-to-medium firms, 10 medium-to-large firms, and 5 firms from New Hampshire.

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6 Ibid, pg. 4.

Here again, many of these may only work with residential projects. A screening question will be asked in the survey to ascertain if the firm does commercial work and what proportion of their work is in the commercial and industrial sectors. (In the summary table at the end of this Sampling Plan, 60% are assumed to work at least part-time in the commercial/industrial sector.)

14 – OTHER POTENTIAL MARKET ACTORS

The major mid-stream market actors for the commercial and industrial new construction, renovation, and equipment replacement and retrofit market areas for major energy usage practices and equipment are included within this sampling plan. There are, however, other market actors that could be considered in later study or for study in niche markets, or issue areas. These include, but are not limited to: commercial lenders, refrigeration equipment suppliers, ski equipment vendors, and a variety of industrial process equipment vendors and consultants.

15 – SUMMARY OF MARKET ACTOR SAMPLING PLAN

A summary of the Market Actor Sampling Plan is provided is Table 1, which shows populations, where supplemental efforts will occur, and sample sizes and stratification schemes.

Table 1. Summary of the Market Actor Sampling Plan

Market Actor	Population of Firms in Vermont*	Assume 60% do C/I or mix	EVT supple-ment	NH & East. NY supple-ments	Random Sample of:
Architects	139	83	✔** & DL&I		30: Commercial screen 20 from large firms 10 from small-med. firms
HVAC & Mechanical Engineers	8	Same	✔ & ASHRAE		4: Census attempt 10 if list expanded substantially
HVAC Suppliers	12	Same	✔	✔	5 – Double-check Cool Choice effort & VT screen
Motor Vendors & Suppliers	13	Same		✔	5 – VSD information/screen & VT screen, Check w/NEEP
Lighting Suppliers	20	Same		✔	10: Census attempt & VT screen
Window Suppliers	7-Window wholesale & mfg	7	✔	✔	5: Census attempt & VT screen
Electrical Engineers	Requested		✔		5: Screen for C/I building work
General & Building Contractors	230	138	✔** & DL&I		30: Commercial screen 10 small-med. firms 20 med.-large firms
Real Estate Developers	54	32	✔ & DL&I		5
Heating & Cooling Contractors	241	145		✔ wstrn NH	25: Commercial screen 10 small-med. Firms 10 med.-large firms 5 NH firms
	Quotas: Ensure at least 5 that do at least 1/4 of business in each of following: Small units Medium sized packaged units Large DX and chiller systems				
Electrical (Lighting) Contractors	233	140		✔ wstrn NH	25: Commercial screen 10 small-med. Firms 10 med.-large firms 5 NH firms

* Within InfoUSA database.

** For non-Vermont individuals, check firm names.